

# Working with the Market

## Approach to Reducing Urban Slums in India

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## Abstract

This paper examines the policy options for India as it seeks to improve living conditions of the poor on a large scale and reduce the population in slums. Addressing the problem requires first a diagnosis of the market at the city level and a recognition that government interventions, rather than thwarting the operations of the market, should seek to make it operate better. This can substantially reduce the subsidies required to assist low income households to attain decent living standards. The authors show that government programs that directly provide housing would cost, in conservative estimates, about of 20 to 30 percent of GDP, and cannot solve a problem on the scale of India's. Using two case studies,

for Mumbai and Ahmedabad, the paper offers a critical examination of government policies that shape the real estate market and make formal housing unaffordable for a large part of the population. It illustrates how simple city level market diagnostics can be used to identify policy changes and design smaller assistance programs that can reach the poor. The linkage between chronic infrastructure backlogs and policies makes housing unnecessarily expensive. Increasing the carrying capacity of cities is essential for gaining acceptance of real estate policies suited to Indian cities. The authors propose approaches for funding major investments to achieve this.

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This paper—a product of a collaboration of the Finance, Economics and Urban Development Department, Sustainable Development Network and the Wolfensohn Center for Development at the Brookings Institution—is part of a larger effort in the department to identify effective approaches for improving living conditions of the poor in cities at a large scale. Policy Research Working Papers are also posted on the Web at <http://econ.worldbank.org>. The authors may be contacted at [pannez@worldbank.org](mailto:pannez@worldbank.org), [duatreb@msn.com](mailto:duatreb@msn.com), [architect.planner@gmail.com](mailto:architect.planner@gmail.com), and [vidyadhar.phatak09@gmail.com](mailto:vidyadhar.phatak09@gmail.com).

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# **“Working with the Market: A New Approach to Reducing Urban Slums in India”**

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## A. Introduction

Two powerful principles have guided urban land management policies in India, at least since the 1970s. First, keeping India's cities livable means discouraging people from coming to large cities and distributing growth to rural areas and small secondary cities. Second, planning and other regulatory and financial policies coupled with rationing of urban services will actually prevent people from moving to cities and hence make them more livable. Together, these two principles are part of a broader philosophy underlying the thicket of policies commonly referred to as the "license raj" that grew up after Independence in India. This contrasts to the overall policy approach post reform in 1991, which—very successfully—unleashed the sources of economic growth and sought to manage economic decisions less directly. Here, we argue that, whatever their merits in the past, existing urban land management policies that seek to control the urban land market tightly are no longer suited to an India which is growing at rates exceeding 8% for sustained periods and in which 70% of new employment is generated in its cities. These policies have made formal housing expensive and unattainable to a large share of the population, reinforced both chronic urban infrastructure shortages city-wide and squalid, precarious living conditions in urban slums.

The government of India (GoI) is to be applauded for wishing to turn this around—taking on the ambitious and worthwhile task of dramatically improving living conditions in India's cities, with the ultimate goal of Cities without Slums. Substantial increases in central budgetary support to major programs that will improve slums in Indian cities are in the works. It is timely to consider the design of a major program shift such as this. In spite of India's rapid growth, ensuring that good housing standards are affordable to all who wish to live in cities will probably take a generation, and getting off to the right start with the first major central slum program is key.

As we argue below, a housing policy that supports "cities without slums" should involve: (1) making the market work better so that market-priced housing is more affordable; and (2) subsidies targeted primarily to the substantial share of the urban population that will still be too poor to afford socially acceptable minimum shelter conditions. Assistance to all those households, even if targeted carefully, will be large in relation to fiscal capacity. This paper proposes an approach designed to make the lofty goal of improving living conditions for all of India's urban poor attainable, and maximize the effectiveness of government resources dedicated to this effort.

Without government action, slum populations can be expected to grow in urban India even in the face of rapid income growth. Table 1 illustrates a variety of scenarios for populations under the poverty line in India. These scenarios use the population projections from McKinsey (2010) and draw from the range of estimates of the elasticity of poverty headcount percentages with respect to economic growth. (Murgai and Zagha: 2010). Even with sustained rapid income growth, millions in cities are likely to remain poor and be unable to afford access to formal housing. This is because the urban population in India is due to grow considerably over the next 20 years. Even with rapid income growth, and much lower poverty incidence, the numbers of poor people in cities will continue to be substantial. Even with the arguably implausibly optimistic scenario of reaching a 2% poverty incidence in India's cities, 11 million people will be poor. A more likely scenario suggests that twenty years from now, somewhere between 30 and 40 million people in urban India will be poor, even if the economy performs very well over the long term.

Scenarios of # of Poor in Cities					
Elasticity of Poverty with respect to Income Growth	Income Growth pa	Period in Years	# of Urban Poor 2030 M	Urban Poverty incidence	Total Urban Population 2030 M
0.5	8%	20	65	11.1%	590
1	8%	20	28	4.7%	590
1	6%	20	43	7.3%	590
1.2	10%	20	11	1.9%	590

**Table 1: Number of people under the poverty line in urban India under different poverty elasticity assumptions Source: Authors' calculations.**

This paper outlines a new strategy in four main sections:

- 1) Shaping the market to 'right-size' the need for subsidies. The supply of urban real estate markets in India is deeply constrained by misguided or outdated government policies. These policies have a dramatic effect on prices and the quite unsurprising result is by far the largest slum population of any country in the world. India's vast and growing slums are not an inevitable result of fast urban growth or poverty. Vietnam's cities are growing at twice the rate in India, per capita income is roughly

similar, but the incidence of slums is much smaller. Other once-poor Asian countries like Thailand have passed through the early phases of their urban transition with far smaller slum populations. Hong Kong SAR, China, accommodated one of the most rapid influxes of poor migrants in the 1950s and 1960s, while rapidly accommodating them in decent housing. If India wishes to deal with the slum problem on a large scale, it must wind down the phalanx of policies that artificially raise the price of housing and make the slum problem larger than it need be. The first section discusses these distortions and their impacts.

- 2) Shortcuts to reform through direct housing provision: Can they work? The very distortions that restrict supply and inflate the cost of housing also give the impression that there are affordable shortcuts to the market reforms and targeted subsidies. Ideas like cross subsidizing housing for slum dwellers out of the costs of putting up new housing developments for the non-poor<sup>2</sup> are popular with governments around the world, because they have no visible budgetary costs. In India, they are particularly attractive because supply is so tightly rationed and housing prices so inflated that often developers will accept these implicit taxes without complaint. Their costs can easily be passed on to buyers. Because slums have grown so rapidly in the face of rising prosperity, many have come to believe that a rights-driven approach for national standards of decent housing funded by central subsidies can eradicate slums. In this section we show that these ‘solutions’ are both prohibitively expensive and even under the most favorable assumptions would take a generation to complete the enormous task of housing the current slum population. Such programs are likely to shift the affordability problem from households to governments. They may offer expansive promises, but will fail to deliver. A few lucky or well connected beneficiaries will receive a deep subsidy while the majority of the target population will be excluded.
  
- 3) One size does not fit all: Illustration from case studies of Ahmedabad and Mumbai. In this section, we examine data on the housing market outcomes, prices, sizes and locations of homes, plus specific constraints to supply in each city. This analysis demonstrates that an efficient

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<sup>2</sup> In India, these most commonly take the form of reservations requiring a certain percentage of houses for the poor to be built in all new developments (one of the JNNURM reforms) or else provision of regulatory relief against provision of homes to low-income groups (TDR schemes).

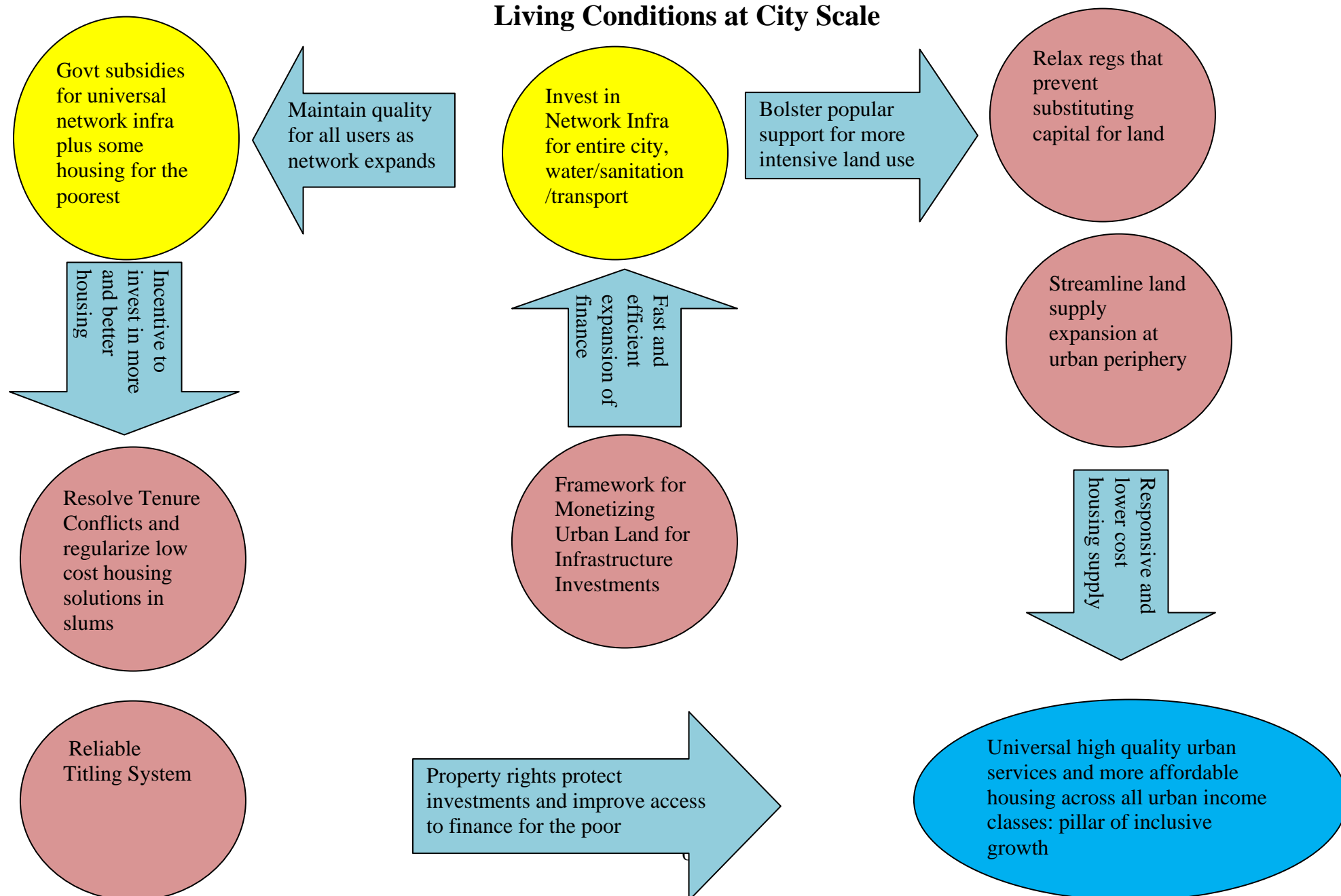
approach to subsidizing a minimum shelter<sup>3</sup> standard across all Indian cities must take into account market conditions specific to each city. We demonstrate how this analysis can be used to determine the scope, design and cost of government assistance to address the slum problem in a given city.

- 4) Key elements for government slum policy. In conclusion, the findings from the first three sections are recapitulated to discuss the key elements of a strategy for improving the living conditions for slum dwellers on a large scale—and city by city. Figure 1 below recapitulates the key elements of such a strategy.

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<sup>3</sup> We refer to shelter here because it includes not only housing but basic services that provide environmental amenities to households such as safe water and clean and safe streets. In India, these services are rationed all over the country and are of higher priority for government programs because these are much more problematic and more expensive for individuals to provide on their own.

**Figure 1: Escaping the Low Level Urban Equilibrium: A Market Approach to Improving Living Conditions at City Scale**





## B. Right-sizing the Need for Subsidies to Slum Dwellers

### **The growth of slums is a market response.**

Contrary to the conventional view, the existence of slums is not necessarily a sign that markets cannot provide housing to low-income households. The existence of slums demonstrates that the private informal sector is able to devise housing solutions for even the lowest income groups. Governments have an important role to play, however, in determining the penalties paid for living in low-cost housing. They determine, by setting standards that raise costs, how much low cost housing is informal and thus illegal. They determine whether informal low-cost settlements get basic services. Governments also decide on which protections they extend under the law for acquired property rights and investments in informal structures. Likewise government policies shape many the cost drivers of private sector supply response, and thus determine the share of total housing demand that can be met in the formal sector, and how much must be met by informal slum settlements.

Why is the share of the informal housing sector increasing in India while urban productivity and households' income have been steadily increasing over the last 20 years? Regulatory constraints and land supply bottlenecks created by government prevent the formal housing market from offering products that low-income groups can afford. Dramatic under-provision of network infrastructure that accommodates intensive land use and permits concentration of population where people want and need to live considerably compounds the problem. It reinforces pressures to regulate the supply of built space and rations access to basic environmental services in informal settlements. Removing these constraints could enable the formal sector to meet a much larger part of the demand of households currently living in slums. Government policy can also reduce the vulnerability of those who still can only afford to live in informal settlements.

**The appropriate frame of reference for policies to reduce the slum problem is the potential supply response across the entire housing stock.**

Slums are not static entities. New households move into slums every day. The new comers may be new migrants to the city or households who can no longer afford formal housing. Some households currently living in slums may be able to leave them and move to formal housing. Some slums may be improved to the point that when their tenure is formalized, and their standards are similar to formal housing.

The formal housing stock is not static either. High income households tend to move up the housing scale, moving from older units to newer and more modern ones. In doing so, higher income households free up the older housing stock. These older units can then be used by middle income groups, who are themselves moving up market, freeing dwelling units in less desirable areas. These older units vacated by middle income groups are precisely the ones that would allow the more affluent slum dwellers to move out of slums and afford older units in the formal market. It is also likely that older housing units are better located for access to jobs than units in new greenfield developments.

This dynamic illustrates why it is counterproductive to constrain or tax high end development to “promote” low cost housing. The effect is likely to be just the opposite. Production of new housing for higher income groups at lower costs has a positive effect on the entire housing supply. Taxing it implicitly with cross subsidies does the opposite. Removing rigidities at any point in urban real estate supply chain can improve the availability of low-income housing. Restricting supply pushes higher income groups into the rehabilitation of older homes, which could instead have become moderately priced lower quality housing. This older inner city housing stock vacated by higher income groups might constitute a more attractive solution than new suburban developments for lower income groups who lack the mobility of more affluent households.

Removing rigidities that prevent these market responses to shifting demands is an important part of affordable housing policy--more important even than direct provision of public housing. In the dynamic economy of India, it is important to monitor these movements of households city by city as incomes increase.

Monitoring these flows can then help to gauge the success of market oriented policies. For example, in Mumbai, as will be discussed in more detail later, the absolute decline of formal housing and the rapid increase in slum populations over ten years of strong income growth should send a blinking red alarm signal that supply side policies need to be revamped.

### [How urban policies have constrained the private sector housing supply response in India](#)

Policies that affect urban land use are at the heart of supply constraints. Urban agglomeration economies are derived from locating in close proximity to other productive activities. One of the most important features of any residence is location close to jobs, services and amenities. As such, well located urban built space is a valuable factor of production for all urban economic activities and workers, and its price will be determined in a fierce competition amongst all possible uses. Well located land is necessarily limited in any city. In India, government policies further constrain the supply of land *and* floor space while also inflating demand for land by:

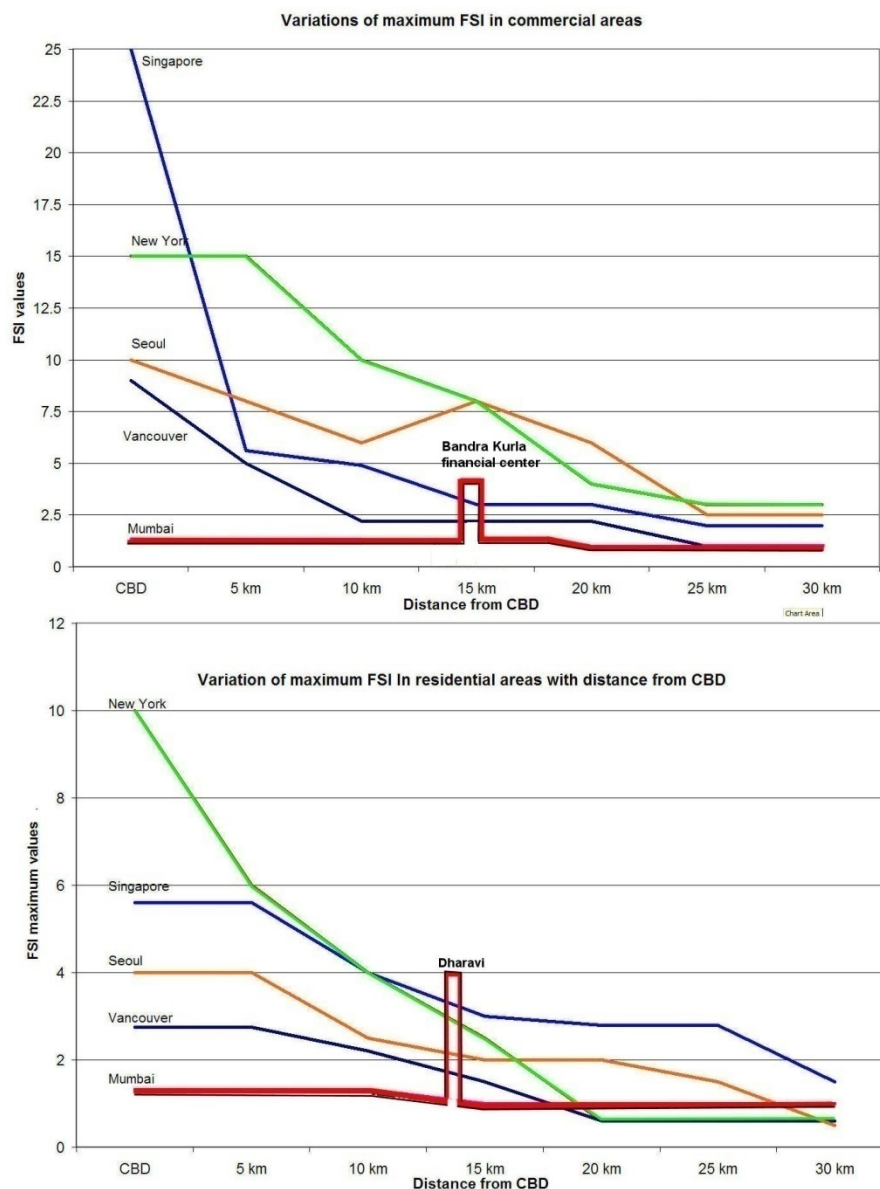
- 1) Reducing the scope for substituting capital (building more stories) for land
- 2) Imposing rigid requirements on consumption of land per area of usable built space with little regard to its costs in terms of affordability
- 3) Raising the costs and time required for expanding land at the urban periphery.
- 4) Freezing use of prime land for redevelopment regardless of its market value, due either to public ownership, pervasive reservations of private lands, tight regulations that make existing land use illegal, or ambiguities in land tenure.
- 5) Chronically underinvesting in network and connectivity infrastructure that permits a manageable and productive increase in urban densities.

### Substituting capital for land

The typical solution to scarce and costly urban land is to substitute a cheaper and more readily expandable factor, capital, for land by building multiple stories. This permits production of more floor space in good locations. Rules that limit the amount of floor space that can be built on a given piece of land reduce the availability of well located floor space and bid up the supply price of a given amount of floor area provided in cities to meet all demands, including housing. This particular regulation is commonly referred to as a maximum floor area ratio (FAR)<sup>4</sup>. Most countries use maximum permissible FARs, but the FARs in large Indian cities are small fractions of those used in most other large cities in the world, including in other low and middle income countries. The low values for FAR in many cities of India are exceptional as can be seen in Figure 2. These low FAR in India also vary little with distance from the city center unlike most other countries.

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<sup>4</sup> Also referred to as maximum floor space index (FSI). These two are used interchangeably in this paper.



**Figure 2: FAR variations with distance in Mumbai and other cities in the world**

Table 2 illustrates how reducing FARs can raise the costs of providing living space. This example uses land values representing relatively low and higher values for large metro cities like Delhi or Mumbai and taking reasonable estimates for the costs of basic standard construction and the impacts of building much higher in the high FAR case. It illustrates that low maximum FAR's can increase costs above what the market would choose to supply in areas with higher land costs. This table also illustrates the impact of FAR on aggregate demand for land. Employers and

households demand a certain amount of space to live and conduct business in the city. When FAR's are kept low, much more land is required for a given amount of office or residential space. High prices will of course compress the demand for space, but not completely, so low maximum FARs result both in spread out cities and unnecessarily high land prices.

**Table 2. Scenarios Comparing Impact of Lower and Higher FAR on Costs at Different Land Prices**

Parameters	Units								
FAR		1.3	4.0	1.3	4.0	1.3	12.0	1.3	12.0
land price per square foot	INR.	800	800	4,000	4,000	800	800	4,000	4,000
Impacts									
land required per square foot of built floor space	square feet	0.77	0.25	0.77	0.25	0.77	0.08	0.77	0.08
land cost per square foot of built floor space	INR.	615	200	3,077	1,000	615	67	3,077	333
construction cost per square foot	INR.	700	770	700	770	700	1,400	700	1,400
total cost per square foot of built floor space	INR.	1,315	970	3,777	1,770	1,315	1,467	3,777	1,733
Cost increase for built space due to lower FAR	%	36%		113%		-10%		118%	

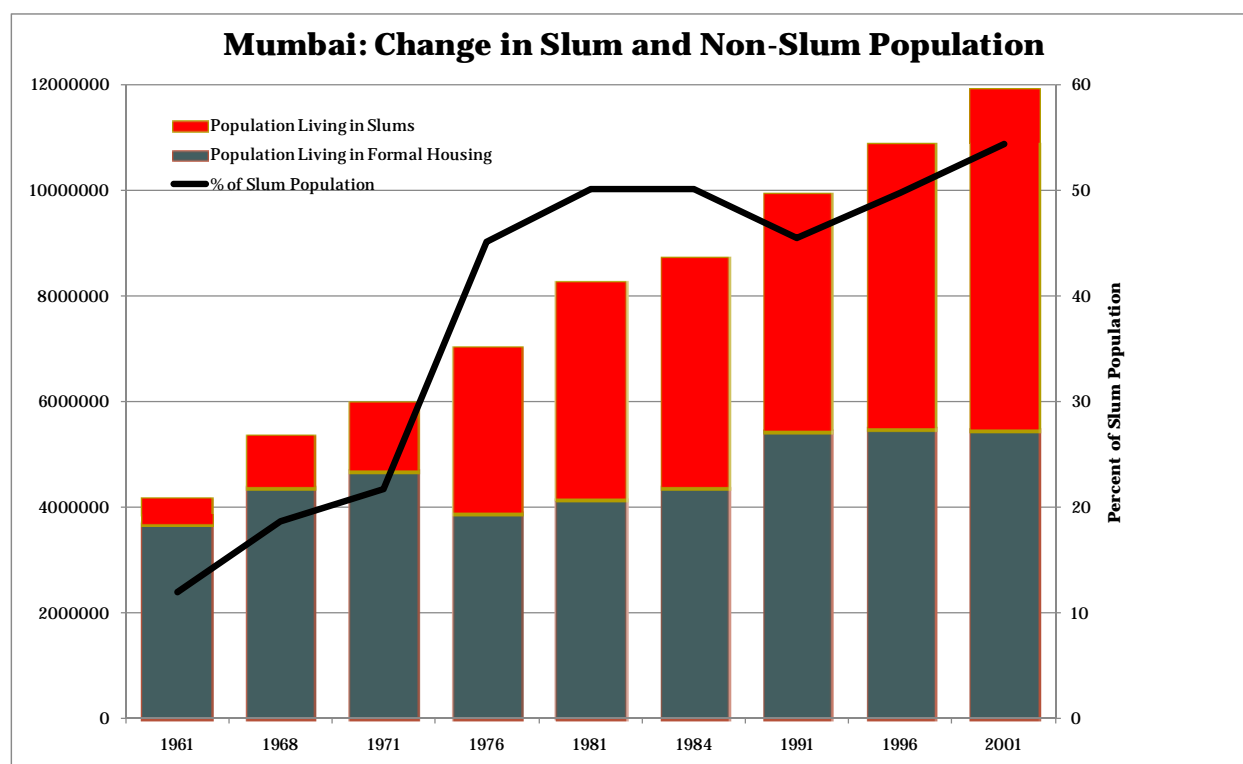
Construction costs assumed to increase by 10% and 100% respectively for 4 and 12 FAR . Land costs are hypothetical.

FAR regulations are not alone in forcing high consumption of land and reducing scope for substitution of capital for land. Minimum plot sizes, regulations concerning use of elevators, parking, street width, maximum building coverage, etc. require high consumption of land per unit of usable built space, and thus contribute to the high cost of formal housing. Many of these regulations are normative and not based on any economic assessment of the costs (including the price of land) they impose on consumers of housing in a given city. In some areas, these additional restrictions are such that they prevent a developer from using even all the available FAR. The private formal sector could provide more housing for low-income groups if these regulations were audited to insure that land use

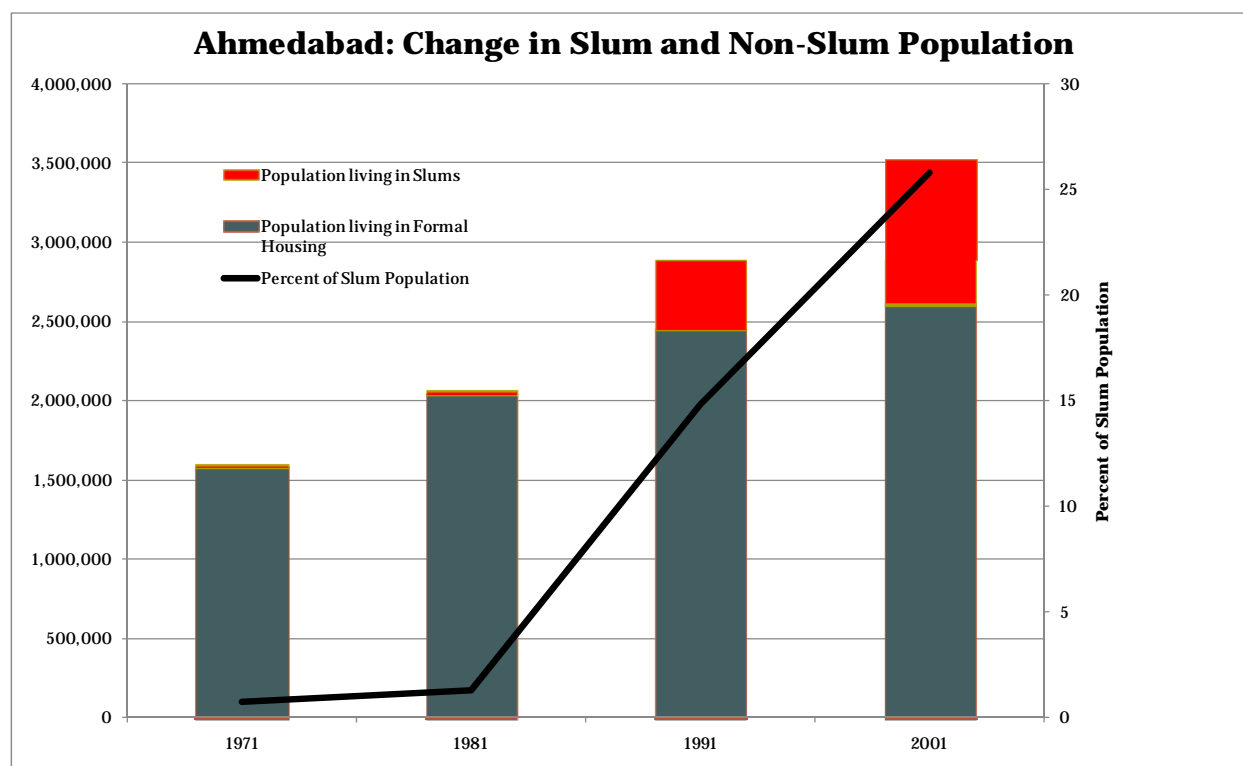
regulations are consistent with purchasing power and urban land costs in different areas of the city. The cost of reserving land for wide streets and parking lots even in areas where most residents don't own cars and walk in their immediate neighborhood is much higher in a mega-city like Delhi than a secondary town in a backward area. Yet rarely do the regulations, typically established with strong guidance from the State, reflect the costs imposed by rigid adherence to norms across cities or neighborhoods. (See Annex 1 for some illustrative examples from the Ahmedabad by-laws that make it hard to provide market responsive formal housing for low-income groups.)

Figures 3a and b below illustrate the major impact of these regulations on fast-growing economically vibrant cities. In Mumbai, regulations have driven down permitted maximum FARs over the years, with the final reduction in 1991 (ironically coinciding with the dismantling of the license raj in other parts of the economy) to a 1.33 Maximum Allowable FAR for the entire greater Mumbai. Nearly all of the population increase over time has been absorbed in slums even as income has increased rapidly. Now 54 percent of the population lives in slums. Mumbai has a much higher share of slum population in spite of being better off. In Ahmedabad, over the period where highly restrictive planning and regulatory policies were pursued, the percentage of the population living in slums grew. (see Box 2). New census information will be very useful to assess the impact of the policy changes that were introduced in Ahmedabad in the 2000 plan.

Figures 4a and b illustrate, showing the household income class distribution for Mumbai and Ahmedabad.



**Figure3a. Mumbai --Population living in Formal Dwellings and Slums over Time**



**Figure 3b. Ahmedabad-Population Living in Formal Dwellings and Slums over time**

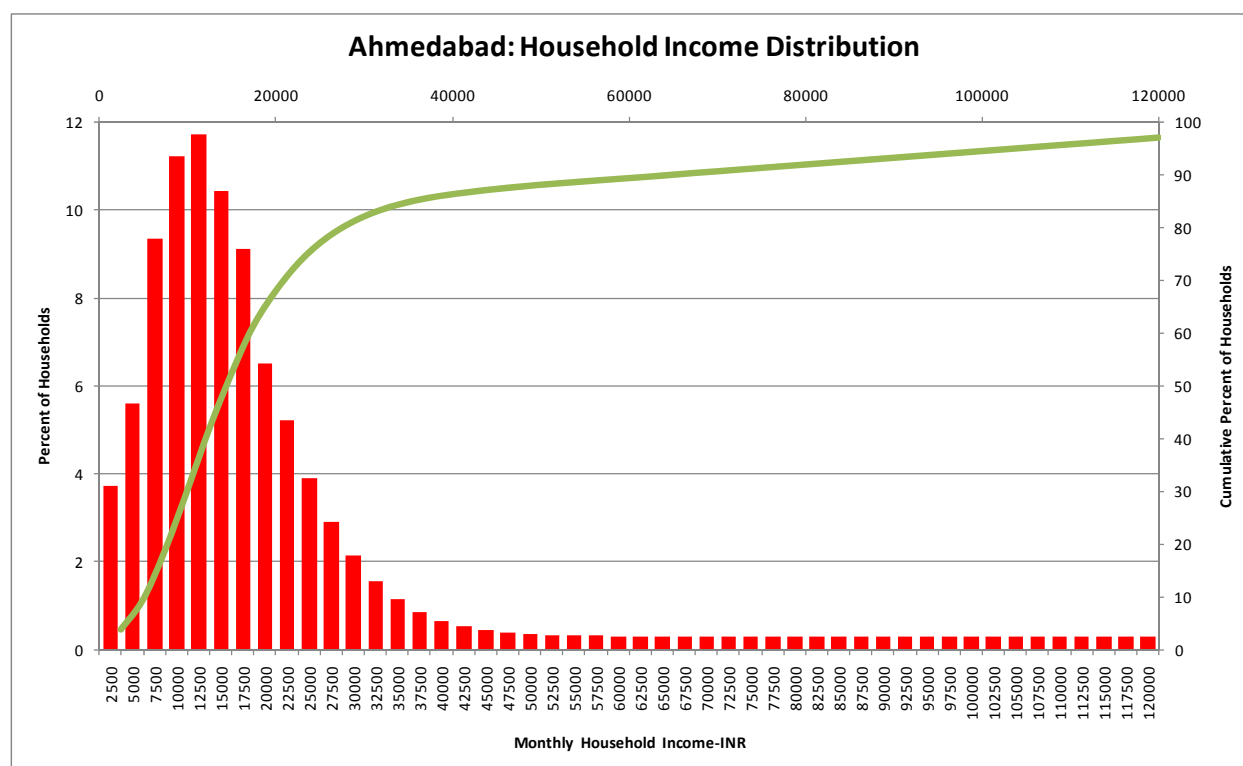


Figure 4a. Income Distribution in Ahmedabad

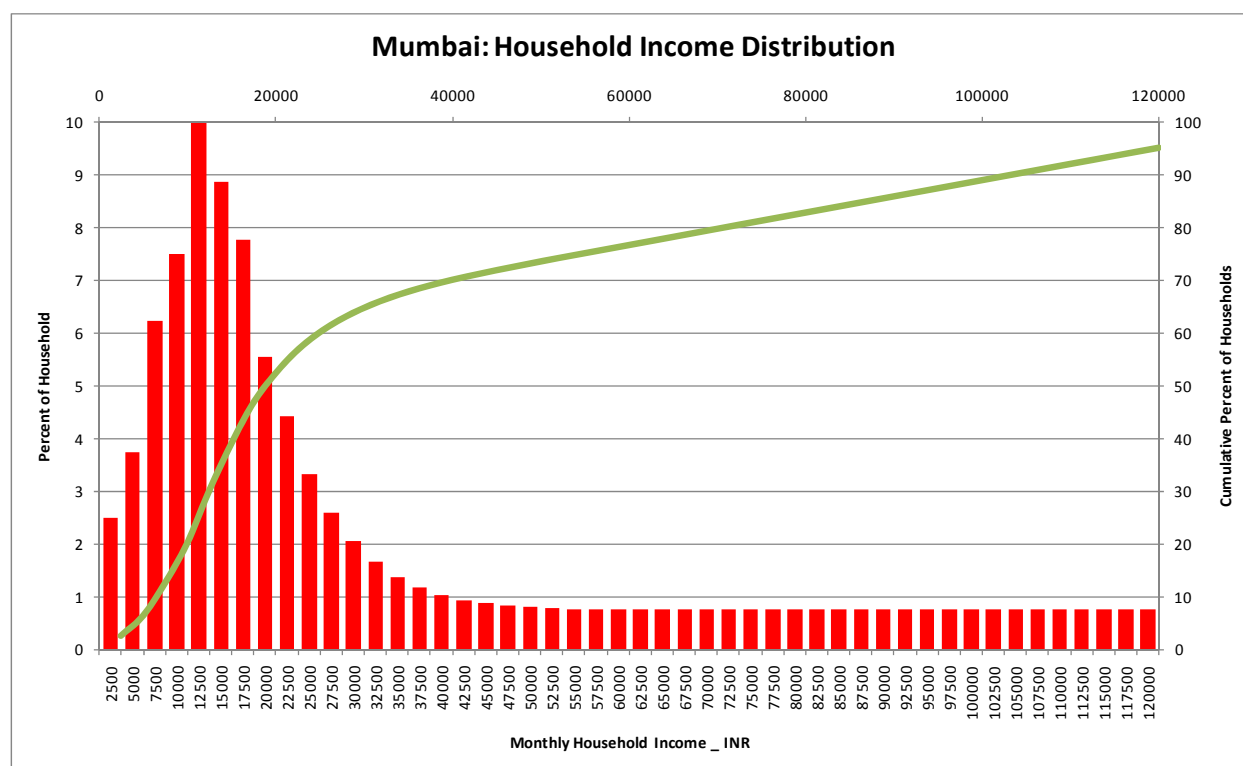


Figure 4b. Income Distribution in Mumbai



**The existing land registration and tenure system freezes land in current use, perpetuates fuzzy property rights that impede investment, and makes expansion of urban land use at the periphery costly and time-consuming.**

In India, the transmission of land tenure and changes of land use are subject to multiple layers of legislation, some dating from colonial times. Several government agencies, from ministries of agriculture to the ministries of finance and revenue have to provide an authorization for a simple change from agricultural to urban use, even for lots already within the perimeters of municipalities or development authorities. Oftentimes, urban land transactions require time consuming coordination between state level authorities in the revenue department and local government authorities, whose systems operate on different principles.

Many lots in and around cities are sold and bought in good faith but without always following the intricate procedures required by legislation. These lots are then tainted with a “fuzzy” or dubious title and any sale or re-development of the land will potentially incur high risk and potential law suits or a “stay order”. Oftentimes either old laws like the Urban Land Ceilings Act, or restrictive land use regulations, now repealed, placed reservations on plots which prevented normal legal transactions or made any formal use of the land illegal. These plots were sometimes rented or “sold” to unsuspecting buyers who were unaware of the restrictions. Meanwhile the original owners sometimes sought to regularize the land use while retaining formal title. This cycle of regulation and creation of “grey rights” results in competing claims on these lands. Because of this legal uncertainty, many urban lots are de facto frozen, preventing formal development or sale transactions. The number of urban lots in Indian cities that are frozen and therefore removed from the formal market is not known, but such frozen plots impede the intensification of land use that is a normal part of the urbanization process. In some cities lots with problematic tenure may amount to a large percentage of the formal land market.

Lots with fuzzy tenure are often located in already urbanized and serviced areas. The occupants who bought the land but do not have clear tenure are likely to be able to resist eviction, but they are unlikely to invest in valuable improvements. It is costly and time consuming to aggregate plots of land in this condition, so redevelopment is very difficult. Yet these lots are well located and may benefit from access to existing infrastructure networks. But because these lots are frozen for formal development, a part of the existing infrastructure cannot be fully used

and the municipality or development authority is obliged to develop more land in suburban areas.

In addition, even when land and property titles are clear, the high transaction cost and time involved in transmitting titles act as supply constraints. High stamp duties are not the only transaction costs. The time and expertise required to transmit titles legally might discourage formal transactions for small lots, although these are precisely the type of lots that should be readily marketable. They allow for an efficient expansion of built space in local areas without requiring major infrastructure expansion. Simplifying the procedure for changing land use and transmitting title would increase immediately the number of urban lots that could be developed and would contribute to alleviating the land and floor space shortages in Indian cities.

We illustrate the specific difficulties and types of transactions costs incurred using an analysis of land conversion at the urban periphery taken from Ahmedabad.

Conversion of land at the urban periphery. The topography of the surrounding countryside does not pose an impediment to the expansion of the city. However, before anyone can legally build there, land surrounding the city that is classified as agricultural<sup>5</sup> has to be legally converted to urban land. This is a complex process involving a number of physical, cadastral and tenure related transformations. Completing each of those steps involves a great deal of time, financial outlays, and risks for a developer. These in turn drive costs which must ultimately be built into the price of the final housing product (or commercial or industrial space). Interest during construction is one of the most important cost drivers for developers. It accounts for about half of total development costs in a typical development project in a relatively expeditious regulatory environment. The cost burden, direct and indirect, of these procedures can be very substantial.

Key steps in the entire process, starting from the conversion of agricultural land up to sale of housing as well as the different agencies involved are listed in Figure 5 below. All new housing provided on the periphery of Ahmedabad must pass through these laborious procedures. The process for redeveloping and intensifying land use on existing plots within the city is similar except that steps 4 to 8 are not relevant—if the plot has already passed through the agricultural to urban conversion process, which is not the case for many plots in the city.

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<sup>5</sup> By agricultural land, we mean land classified as agricultural. This can be the case where or not the land is under cultivation.



- High minimum regulatory standards not only raise the costs of a legal dwelling and impose heavy costs on low-income groups: they also block a potential source of investment in low-cost housing.**

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sanitation. However, one of the most important social and economic penalties imposed by high standards is the exclusion of slum dwellers' housing from the protection of the law normally accorded through the property rights system. Any real estate transaction is illegal in slums. Transactions however are indispensable and occur as often in slums as in the formal real estate sector. Any dispute over contracts can be solved only by using force, because contracts passed in the informal sector are unenforceable in a normal court of law. Slum dwellers are also subject to evictions and loss of all they have invested in their homes and land, and may pay regular protection money to avoid this. Yet, one of the best sources of supply of well located low cost housing is current slum dwellers, who, if they have sufficient security of tenure will invest in additional housing space which can be sold or rented out to even lower income groups. Maintaining strict and inflexible standards increases vulnerability and thus cuts off this potential supply. This situation contrasts sharply with urban China, for example, where the urban villages system protects 'peasant' landowners who have legal land tenure and who do not need to adhere to normal urban building standards. These villages provide an often very well located supply of low cost rental housing for the low-income population, including migrants. Measures to facilitate some form of parallel formal housing market that permits lower standards in limited areas of a city and provides explicit legal protections for owners of this housing should be considered for India's cities.

**Chronic under-investment in primary infrastructure and rapid transit impedes development at densities reflecting the economic potential of urban land and makes it very difficult to rationalize land use regulations.**

Failure to invest sufficiently in urban infrastructure has greatly contributed to the current shortage of urban built space and extremely high real estate prices. McKinsey (2010) estimate that Indian cities make annual capital investments of \$14 as compared to \$116 in Chinese cities. The lack of urban roads and public transport contributes to the fragmentation of urban labor markets and substantially reduces urban productivity. Poor quality public transportation drives people to live near their work, further creating pressure on well-located land. In Indian cities, shortages of water and power, drainage, sewers and proper waste disposal facilities affect all income groups.

Government's perceived inability to expand and improve infrastructure networks in response to reasonable demands for urban infrastructure is responsible for what might be termed a Malthusian view of the carrying capacity of cities. Infrastructure is so chronically undersupplied, and responds to little to increases in population and economic activity that it is seen as a fixed resource rather than a set of services

managed to meet local demand. The unpopularity of land use reform that would increase the intensity of land use, whether it is to increase FAR or to redevelop obsolete cotton mills, is symptomatic of this view and quite understandable. Without very substantial improvements of basic infrastructure services that eliminate the chronic shortages that all urban users face, it is more than likely that any increase in local density will be perceived as decreasing the availability, quality, and reliability of basic services for those already living in cities.

No low-income housing policy with large scale impacts could succeed in India without a massive investment to upgrade the quality of city-wide network infrastructure, mostly water, power, storm drainage and transportation. It is an essential facilitator of all the supply side regulatory changes we have discussed above. After supply side reforms, the private sector may be able to provide new low cost housing affordable to many current slum dwellers, but the existing infrastructure could still not cope with the increased water and power consumption that would be required—just as it cannot meet current consumption requirements. Similarly, the TDR programs currently seen as a budget neutral solution for the slum problem will place additional stresses on already overstretched infrastructure systems in cities. Using the right fiscal instruments, it is possible to intensify land use to increase the supply of housing, *and* provide finance for more and better infrastructure.

To build critical local support for more rational land use policies, a dramatic revamping of infrastructure systems in major cities is essential. This infrastructure transformation would not only make higher densities acceptable, but would have strong economic benefits as well, making more agglomeration economies possible and economizing on the current high costs imposed by enduring and appalling infrastructure gaps. Rather than playing catch up and seeking to fulfill last year's needs, these programs should aim to build for the city of the future reflecting plausible projections of population and economic growth. Beyond improving the quality of basic services in cities, better transport connectivity is essential for making real estate markets work better. Reduced travel times in the city expand the land area that is considered desirable for either working or living space. This approach would be a dramatic departure from past practice in India. It has been the practice in many fast growing East Asian countries like China, Singapore, Hong Kong SAR, China and Korea.

Such a program would take a lot more resources than are currently spent in Indian cities, but it would not be unaffordable. McKinsey (2010) catalogues a number of options for increasing resources for investment in urban infrastructure. India's

cities have large untapped resources of public lands and other land asset related instruments at their disposal that could generate funding many multiples of what has flowed into India's cities in the past. These resources could be used to form the foundation of a finance package for infrastructure improvements of unprecedented scale. A sale of a mere 13 hectares in Bandra Kurla in 2005 brought revenues equivalent to 10 times the MMRDA's investment budget of that same year and 3.5 times the value of all municipal bonds floated in all Indian cities in the decade following inception of the program. The revenues raised, as astounding as they are, did not fully exploit the potential of this land. Sold with an FAR of only 2, had the FAR been set at 5 (still low by international standards) the revenues raised could have been more than double—tantamount to over 20 years of MMRDA capital spending in 2005 (Peterson:2009). Box 1 provides an example of one such transaction in Ahmedabad that will help transform the city.

**Box 1. Monetizing Government Land for Slum Improvements, Provision of High Quality Urban Public Space and Basic Infrastructure: the Sabarmati Project in Ahmedabad.**

Civic leaders in Ahmedabad had long dreamt of transforming the riverfront of the Sabarmati into a focal point of high quality public space in the city. When the Narmada dam transformed the Sabarmati's flow from seasonal water availability during the monsoon to a continuous flow, it became possible to move from dreams to designs and plans.

The concept was to undertake massive embankment and land reclamation works to create a public realm along the river, improve the river's flood carrying capacity and to even out and protect the very irregular unstable banks that characterized the Sabarmati's meander through Ahmedabad. Interceptor sewers embedded in the reclaimed land would capture untreated sewage coming through the storm water drainage lines and divert it to sewage treatment station downriver, thus making the environment much cleaner and more agreeable. Another very important project component involved relocation of the population living in the slums on the riverbanks to basic housing in the vicinity of the river. At the end of the project, public promenades, parks, informal markets and a wide variety of social amenities would be built on both sides of the river and less than a fifth of the land would be offered for sale for commercial and residential development.

The project cost was substantial, estimated at INR 3.6 billion. (361crores) in 1998. Not many cities have the ability to raise such funding on capital markets or from banks. However, in this case, the city used a very innovative financing strategy. The Ahmedabad Municipal Corporation(AMC) obtained an agreement from the Government of Gujarat to cede the property rights over the reclaimed river bed to them. Once the project was completed, sales of a fraction of the reclaimed land were estimated to cover the costs fully and the financing plan included loans against estimated land prices to be realized once works are completed at which time loans will be paid back. Essentially this financing method used an asset of little value before the project that was transformed by the project itself. The key lay in obtaining agreement from the State to release their ownership rights to the city.

Source: Authors

**Much government controlled urban land is currently underused. If developed at an intensity commensurate with its market price, such land offers an important source of well located urban built space.**

In Indian cities, as is the case in many other countries<sup>6</sup>, the several levels of government and parastatal enterprises own large tracts of land, often located in central, highly desirable urban areas well connected to existing infrastructure networks. Large parts of these government land holdings are often underused or even vacant. Because leasing or selling government land is an extremely complex

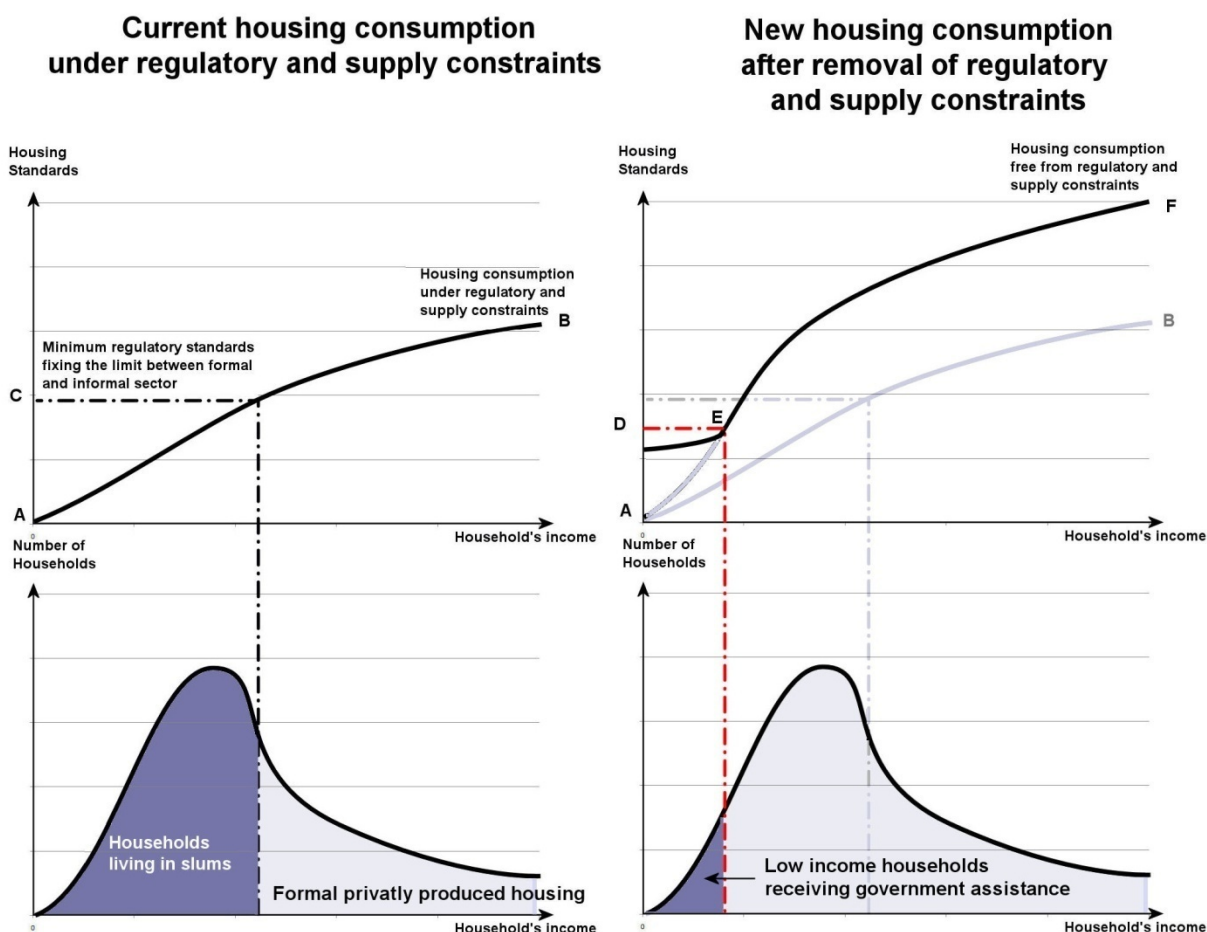
<sup>6</sup> Research conducted for the World Bank's Urban Growth Management Initiative indicates that publicly owned land accounts for more than half of total city territory in 19% of the 120 cities in its sample, and more than one-quarter of city territory in an additional 19% of cities. Rajack( 2007).

business, even very valuable land stays vacant or underdeveloped. This frozen land decreases the land supply on the market and contributes to high land and housing prices. For instance in Mumbai, Port Authority land represents 9 km<sup>2</sup> of prime land already served by infrastructure and with potentially 10 km of sea frontage. This area represents 12.5 % of the total land area of the island city. Allowing more intensive redevelopment of this land, while maintaining space for the use of its current owner, could still significantly expand well located built space in the city, and reduce demands for land in the distant suburbs and help to avoid costly expansion of infrastructure networks.

**Removing supply and regulatory constraints helps to “right-size” the requirement for government subsidies.**

Figure 6 illustrates how revising policies that shape the market also reduce the need for direct government subsidies to improve living conditions in cities. Undoing some of the damage associated with these policies can make formal housing affordable to a larger share of the population and make the slum problem more manageable.





**Figure 6: Housing Policy, housing consumption and households' income**

The upper left graph shows the current supply price and affordability of housing by income group. The standards that the private sector supplies – formal and informal – that are affordable to a given income group are represented by the curve AB. These are dependent on regulatory supply constraints and availability of urban infrastructure. The limit between the formal and informal sector is established by the minimum regulatory standards (C on the vertical axis) for the formal sector. The market cannot produce formal housing units below a price dictated by the combination of regulatory standards (minimum plot size, apartment size, maximum FAR, etc) and market land and construction prices. The informal housing sector, not constrained by these standards, produces housing units for the households who cannot afford the cheapest unit produced by the formal sector. Policy changes (and complementary infrastructure investments) that affect the ability to substitute capital for land and make the supply of urban land more responsive can lower the cost of producing a given housing standard, thus increasing what every income

group can afford. This can be seen in the shift from AB to AF. Selective relaxation of rigid standards brings the most basic formal dwelling unit from C to D.

The current household income distribution is represented in the lower left part of the graph. No credible housing policy can be designed without knowing the number of potential beneficiaries and therefore the total resources that would be required. This is why the upper and lower graphs should be considered together. The upper part of the graph shows housing consumption, the lower one shows the number of households at each consumption level. The removal of supply constraints and relaxation of standards increases housing consumption of most former slum dwellers and allows the private formal sector to provide housing units affordable to them.

However, even after these measures, some very low-income households can only afford extremely low housing standards. The government can economize its own subsidy resources by concentrating its efforts first on direct provision to this group by directing supply subsidies in the form of social services and tertiary infrastructure<sup>7</sup>. We estimate roughly that it would cost about INR 40,000 per slum dweller. The unit cost is an order of magnitude less than the costs of the more ambitious programs discussed below, and constitutes a major, but manageable government program. The number of households that would receive subsidies would be only a fraction of the number of households currently living in slums. Over time, a number of households will move out of much improved slum neighborhoods into the formal sector, although some of them would be replaced by new unskilled migrants. In addition, since part of the supply side measures include substantial improvements for infrastructure networks, all income groups in the city would benefit.

### **C. Can Direct Housing Provision Work without Measures to Make the Market Work Better?**

Because the existence of slums has been erroneously thought to be the symptom of a private sector market failure, the traditional response of governments has been to substitute itself for the market. First, governments often take on the costly proposition of substituting themselves for the private sector by building housing directly for the poor, mandating that the private sector do so, or providing private builders with subsidies to produce low-income housing. Second, governments also seek to stimulate purchasing power of low-income households through privileged

<sup>7</sup> Local neighborhood level network extensions/improvements and household connections.

access to credit, interest rates subsidies or sometimes direct cash assistance for purchasing or renting homes. In this section we examine the feasibility of some of these “direct provision” solutions and their scope for solving the problem. We show that these shortcuts to making the market work better are likely to have very limited impacts, and cannot substitute for a strategy that takes on the policy issues and on feasible goals.

### **The 270 square foot housing program for slum dwellers is prohibitively expensive.**

The government housing policy proposes to provide a formal 270 square foot house to all current slum dwellers. McKinsey (2010) evaluates at 25 million the total number of urban households in India who cannot afford a minimum house. The same report evaluates the average cost of providing such a minimum house in Indian cities at about INR 440,000 (US\$ 9,700) including land and tertiary infrastructure networks. There are a number of reasons to believe that this estimate represents a lower bound of the costs involved. Providing access to such a large home for all slum dwellers will demand more land and is likely to bid up the price. In Mumbai, as we will see below in the detailed case study, the cost of a unit in a location in which current slum dwellers currently choose to live would be about three times that figure. With over 6 million slum dwellers in Mumbai alone, this could increase this estimated cost of providing housing for all slum dwellers by 50%.

Even using these conservative cost estimates, the total cost of providing these minimum standard dwellings for 25 million households would thus be at least of 1,100,000 Crores INR (US\$ 242.5 billion). This amounts to roughly 20% of 2008-2009 GDP. Taking into account the higher costs in Mumbai alone, the bill could rise to 30% of GDP.

The costs for such a program do not stop with government-provided basic housing. The increases in network infrastructure capacity, plus expansion of primary and secondary infrastructure networks needed to accommodate the increased consumption of all services that would arise from moving from slums to formal housing will add a very significant additional cost. These formal dwellings would include a kitchen and bath with running water which would increase water consumption from 50 liter per capita per day (lpcd)—the current average for slum dwellers to the minimum basic standard of 150 lpcd. The total additional water supply capacity to be added—just to support the minimum housing program—

would be at least 10 million cubic meters per day (assuming an average household size of 4 and no leaks in the system). A similar complement of incremental costs would arise both for sewers and electricity. Such a dramatic infrastructure expansion is both costly and unrealistic.

As appealing as the promise of a minimum standard home and the implicit backing of central government to fund it may be, such a promise has no likelihood of being fulfilled. Even if executed over a decade, such a program could cost considerably more than the National Rural Employment Guarantee Scheme, and would stretch fiscal capacity beyond a plausible ability to pay.

### **Developer incentives cannot solve the slum problem on a large scale.**

Because land regulations are extremely tight in India's major cities, developers have been willing to provide some low cost housing as part of a package that also allows them to use land more intensively in the form of increased FAR. That is fact. The relative success of such transactions in the past has led to the belief that a large part of the affordable housing problem can be solved in this way. That is a fallacy.



Two types of proposals using developer incentives are commonly suggested for housing slum dwellers at low cost.

- 1) Imposing a quota on new formal housing projects to oblige the private sector to build EWS housing
- 2) Using tradeable development rights (TDR) to provide free housing to slum dwellers

Both approaches, by loading the costs of social housing onto the production of new housing units, operate by imposing a *de facto* tax on formal housing over and above the current 27 % tax that is already collected by state and central government on housing (McKinsey: 2010: 129). There are limitations to using such cross subsidies.

First of all, taxing new formal housing on a large scale has the perverse effect of making formal housing less affordable. Creating an additional tax on formal housing, whether in the form of land quota for EWS or TDR, increases its cost. This effect raises the number of households who must meet their needs in the informal sector. The share of formal housing in big cities like Mumbai where these schemes are particularly popular (see Table 3) has shrunk in the last few years.

Attempting further taxation of the formal sector will merely aggravate this trend.

Greater Mumbai Population between 1991 and 2001						
Population	1991	% of Total	2001	% of Total	Growth Rate	
Formal	5,749,562	57.9%	5,438,958	45.6%	-0.55%	
Slums	4,176,329	42.1%	6,475,440	54.3%	4.48%	
Total	9,927,882	100.0%	11,916,399	100.0%	1.84%	
Household Size						
Formal	4.54		4.5			
Slums	5.2		5			
Total	4.8		4.7			
Number of Households						
Formal	1,266,423	61.2% 	1,220,501	48.5%	-0.4%	(4,500)
Slums	803,140 	38.8%	1,295,088	51.5%	4.9%	63,382
Total	2,068,309	100.1%	2,515,589	100.0%	2.0%	49,734
Hypothesis of Formal Growth and New Supply						
Percent of households who can afford new formal housing					25%	628,897
Upgrading of Housing and New household formation amongst these households					3.5%	22,011

**Table 3: Mumbai - Changes in population living in slums and formal housing between 1991 and 2001**

Even abstracting from this perverse outcome, obliging private developers to provide housing for the poor will necessarily offer a limited supply of housing for slum dwellers. This is because the yearly flow of formal housing construction is so small in relation to the total housing stock. We illustrate with estimates from Mumbai where developer acceptance of TDRs has been relatively good.<sup>8</sup>

In Greater Mumbai, we evaluate the flow of new formal housing at about 27,000 units a year or about 0.8% of the total housing stock (see Table 3). This new construction is the only source of supply for low cost developer incentive housing. Yet in Mumbai slums account for nearly 45 % of the total housing stock— which represents 56 times the annual flow of new formal housing. The flow of formal housing is dramatically disproportionate to the resources needed to replace the housing stock in slums with incentive based units. This can be seen using an example based on the current TDR program in Mumbai (*Table 4*).

<sup>8</sup> In cities like Bangalore these incentives have had less success because other regulations prevent developers from benefiting from additional FAR. Developers will only agree to the incentive units if it is worth something to them.

Illustration of TDR Schemes at City Scale: Mumbai			
		Numbers	Units
A	# of Slum Households in 2001	1,295,088	Households
B	Entitlement to a Flat per Govt policy	270	Sq ft
C	Total Floor Space Entitlement for Those Living in Slums in 2001: AXB	349,673,760	Sq ft
D	Floor Space Allowed to be sold on the market per space provided to slum dwellers: 70-133%	102%	Average % allowed
E	Total Floor Space Sold on Free Market Needed to Provide Floor Space to those Living in Slums: DXC	356,667,235	Sq ft
F	Per Cent of Households that can Afford a New Formal Unit	25%	
G	Total Number of Households in Mumbai	2,515,589	
H	# of Households that Can Afford a New Formal Unit:FXG	628,897	
I	Annual New Household Formation	3.50%	
J	Total Number of New Formal Units Demanded per year: IXH	22,011	
K	Average New Formal Apartment Size	700	Sq ft
L	Annual Floor Space in New Formal Apartments with Potential to Provide for Affordable Apartments: JXK	15,407,983	Sq Ft
M	Annual Yearly Provision of Affordable Apartment Units if ALL Units use TDR L/B	57,067	Households
N	Number of Years until all Households in Slums Receive a TDR Apartment:A/M	23	Years
O	Average Construction Cost Per Square Foot	700	INR
P	Average Implicit Tax on New Home Purchasers for Constructing Extra Floor Space	480,392	INR Per New Unit

**Table 4: Could FAR incentives in the form of TDR solve Mumbai's slum problem?**

If all new housing is built using TDRs, it would take 23 years for TDR projects to provide apartments for the households currently living in slums in Mumbai. The provision of housing for slum dwellers would come at a cost of roughly 5 lakh (500,000) rupees paid by households purchasing new apartments. Assuming that the average floor space of incentive apartments is about 700 square feet, each buyer of new apartment on the formal market will have to pay, in addition to the cost of its own dwelling, for the dwelling of 2.5 slum households. Obviously, a number of new apartments will be built without using TDR, and this will further lengthen the period over which housing would be provided to today's slum dwellers. Meanwhile, during these 23 years, the slum population of Mumbai could have grown by an additional 3.4 million at today's rates. Those new slum households, more than double the number in Mumbai in 2001, do not receive incentive apartments in this scenario.

TDR schemes and EWS quotas are appealing because they have no direct budgetary implications, but they would be costly for new households entering the formal housing market. Without changes to the market dynamic that is generating negative growth in formal households and slum growth at greater than 4% per annum, these schemes merely establish a game of catch up that never ends.

TDR schemes have the additional cost of aggravating the funding deficit for basic network infrastructure needed to support city growth. Charging an impact fee for new developments is one of the most effective and manageable instruments for financing infrastructure improvements in growing cities, especially when intensity of land use is on the rise. (See American Institute of Planning: 1997) Merely trading higher FAR for apartments for slum dwellers without extracting charges for the infrastructure that is essential to supporting new developments will aggravate the already substantial shortfalls in urban infrastructure. FAR schemes should not be an excuse for continuing the unfortunate past practice of urban development on the cheap. Just as the Development Authority business model has done, TDRs designed to focus only on provision of low cost housing without recognizing the need for additional infrastructure miss an opportunity to use the fiscal potential that these transactions offer.

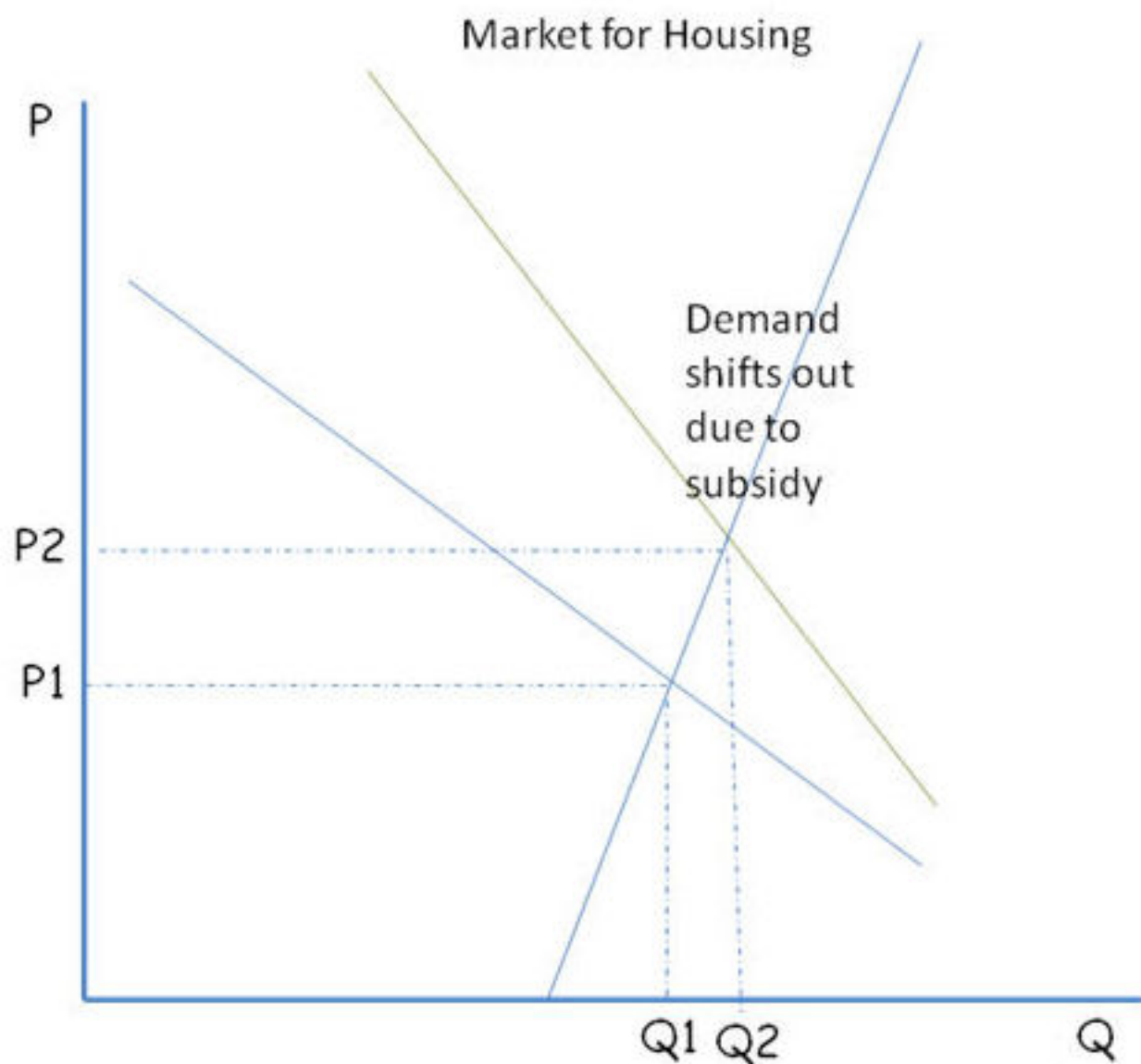
There is also reason to believe that a large number of today's slum dwellers will not stay in the housing offered under developer incentive schemes or public programs for a 270 square foot home. As discussed below in the case studies, much of the new housing provided in Mumbai that will be the basis for incentive schemes is located in the distant suburbs. Public housing programs seeking to



economize on costs will tend to locate in these areas too, because land is less expensive there. Housing located in such areas imposes commutes to work that are too costly for many current slum dwellers. Both our case studies for Mumbai and Ahmedabad suggest that slum dwellers locate in slums at least in part because they are close to their place of work and are unlikely to stay for long in far flung locations.

**Adding demand side subsidies to the mix without supply side measures will have limited effects.**

When housing supply is very inflexible, as it is in major Indian cities, the impact of providing subsidies to improve household purchasing power or offering interest rates subsidies for mortgage loans are blunted, as illustrated in *Figure 7*. Most of the impact of a subsidy directed at improving purchasing power is absorbed in higher prices, because supply is not responsive.



**Figure 7: Impact of housing subsidy on demand and price**

The few countries that seem to have significantly improved the housing conditions of the poor and decreased the percentage of households living in slums have done so by focusing on developing infrastructure to increase effective land supply, allowing intensive use of urban land, and in the initial phases, allowing decent, but low standard housing for the poor. In parallel, these governments focused also on increasing the income of the poor, through heavy investment in general and vocational education, in health services and more generally in increasing urban

productivity. This was the case in large cities of Asia like Hong Kong SAR, China, Bangkok and Seoul. All of these cities were able to accommodate a large influx of poor migrants for decades while the percentage of slums was decreasing. It is only when the supply of housing is quite flexible, as in the case of Chile, that targeted demand side subsidies can reduce the residual of very poor households who cannot afford a formal home (Bertaud: 2010).

#### **D. Market Analysis and Its Consequences for Developing an Affordable Housing Policy in Ahmedabad and Mumbai**

Figure 6 in section B. sets out a framework for a strategy to make housing more affordable and improve living conditions on a large scale in urban India. In this section, we sketch out how this strategy could be applied using two city examples: Ahmedabad and Mumbai. Aside from illustrating how specific data on real estate policies and market outcomes can be used to formulate a strategy, these examples demonstrate how important it is to design policy based on each city's unique real estate market conditions. National standards and templates offer blunt edged and potentially expensive or redundant tools for resolving the slum problem.

#### **Understanding the level and distribution of household income**

The first task in defining a housing policy in a metropolitan area is to understand the parameters of the housing affordability problem in the city. Essentially, this involves measuring purchasing power in comparison to prevailing prices. This analysis must start by obtaining the distribution of income among slum dwellers and the population living in formal dwellings. The task is not easy because many slum dwellers work in the informal sector so their income is difficult to measure with accuracy and can be quite variable. However, in India there are many surveys on income and consumption of slum dwellers that have been conducted by universities and NGOs, so it should be possible for every major city to have a fair idea of income distribution within the slum community and how these incomes overlap with the rest of the population.

The distribution of income among urban households is indispensable to assessing housing policy. The distribution of income evolves constantly and in a different way in each city. Earlier, the establishment of the traditional income categories such as EWS, LIG, MIG etc. were an attempt to understand housing needs based on income. Unfortunately these categories have been used as “norms” to establish prospective benefits or even housing “rights” rather than to quantify demand and

capacity to pay. We suggest that each city establish and constantly monitor the distribution of households' income in order to ensure its housing policy is responsive to changes in demand.

With the data available we have estimated an income distribution profile for Mumbai and Ahmedabad<sup>9</sup> (Figure 4a and b). Incomes are shown at INR 2,500 intervals from 0 to INR 100,000 per month. Each income profile includes 2 graphs, an histogram showing the number of households in each income interval (on the primary vertical axis on the left) and a cumulative curve showing the percentage of total households below a specific income (expressed on the secondary vertical axis on the right).

The data shown on Figure 4 shows how useful accurate information on city-wide income distribution can be for setting housing policy. The profiles of household income in Mumbai and Ahmedabad are markedly different. In Mumbai is a more prosperous city (median income is around INR 20,000 per month and average income is 40,000 as compared to a median of 15,000 and a mean of 28,000 in Ahmedabad) but Mumbai has a far more substantial slum population.

The shape of the distribution curve may change with time. Some households will shift to the right when their incomes increase because of higher productivity, on the other hand, an influx of migrants from rural areas may increase the number of households in the left part of the graphs. These changes will put pressure on the housing stock and will test the elasticity of housing supply as households' income changes. This phenomenon can be observed in Mumbai where higher income groups represent a more substantial share of the population.

Once income distributions are available, identifying households that would be eligible for assistance in any likely supply conditions, i.e. those facing a binding demand side constraint is the first step. These households will need direct assistance. We can define this group as those currently living in slums who could not possibly afford the *construction cost* (at current market prices) of a minimum one story simple dwelling of say 130 square feet<sup>10</sup> with access to water and toilet. The problem of the land cost affordability must be treated separately after addressing the supply side and regulatory constraints. Very roughly, we calculate

<sup>9</sup> Annex 2 provides details of methodology and sources for developing this income distribution data.

<sup>10</sup> This cost represents the price of building a dwelling of decent quality in wood and brick. The cost of a high rise apartment meeting formal standards would be much higher per square foot. In any case, such a small home would not meet formal standards, but it would provide much improved accommodation for poor slum dwellers.

this cost to be INR 465 per square foot or about INR 60,000 for a 130 square foot home, which indicates an annual income of INR 24,000. As can be seen from the charts 4a and b, this is a small percentage of households in both cities, and a tiny fraction of the population living in slums.

For this group, it is clear that some sort of subsidy will be necessary. What form this subsidy will take should be discussed only when the total number of households requiring a subsidy is known. The next step is to determine which improvements are most desired by this group and by their neighbors who may be affected what measures it would take and how much it will cost to meet those needs. Ultimately, this must be compared to subsidies that may be available from the centre as well as state and local own resources.

### Understanding factors affecting the supply of housing in Mumbai and Ahmedabad

As discussed above in Section B, these factors, especially those determined by policies that affect the supply of available land and built space in a city must be understood and evaluated critically before embarking on a program to improve housing affordability and reduce slums. Detailed case studies on Ahmedabad and Mumbai prepared as part of this work and discuss these constraints at length<sup>11</sup>. Section B above also discussed a number of these issues. Box 2 below summarizes the history of policy measures taken in both cities over the last few decades.

Clearly Mumbai suffers from a tightly constrained supply of housing which has translated into high prices. These high prices have not kept people from moving to Mumbai, as was their original intent. Instead, as can be seen in Figure 12 below, they have forced the majority of the population to live in substandard and sometimes horrific housing conditions. These policies have been tightened over time, even as slum populations exploded. As Table 3 above shows, this effect was so strong that the population in formal housing actually declined although the city continued to grow rapidly.

Ahmedabad followed a restrictive planning policy but reversed course ten years ago. This recent more supply oriented policy has permitted the city to grow rapidly without an exploding slum population. Nonetheless our case study shows that there is room for improvement on the supply side. Some of the important remaining issues in Ahmedabad are the legacy of earlier regulations and restrictions.

<sup>11</sup> Available from the authors on request.

Draconian restrictions on property rights like the Urban Land Ceilings Act drove land owners to find semi-legal alternatives to normal market transactions. These solutions create an overhang of muddled property rights and conflicting claims that need to be resolved in order to unleash the supply of better housing solutions. Property disputes prevent redevelopment, improvements and expansion of existing units, and they can prevent owners from renting or selling units they no longer need for themselves. As such, they constitute an additional impediment to supply over and above the regulatory limitations that gave rise to muddled property rights in the first place, and they will not disappear automatically with deregulation. The case study proposes constructive approaches to resolving these conflicting claims. The Ahmedabad case also underscores the importance of addressing the issue of rural to urban land use conversion in a vibrant urban economy. (See Figure 5 above) The legal framework governing these conversions was put in place by the British colonizers when taxing rural land was effectively was the major preoccupation. Today's land management needs are very different. While pressures on urban land and built space are significant all over India, they have nonetheless been dampened for decades by long periods of relatively slow economic growth. Now that India has settled into a high growth path, more expeditious means of expanding urban land use—with due consideration for potential social dislocation—are urgently needed.

## **Box 2. Evolution of Policy on Urban Land Use Management: Ahmedabad and Mumbai**

- 1965: First Comprehensive Development plan for Ahmedabad. Sought to limit growth with a green belt surrounding the city. Defined the allowable FARs in the city at 1-1.5. Private plots were reserved for public uses; to be appropriated using the acquisition.
- Policies continued in the subsequent plan sanctioned in 1976.
- By the mid 1980s approach had proved a failure. Illegal growth at the periphery, FSI and zoning regulations ignored, reserved plots were sold for informal house building, artificial scarcity raised
- Development Plan for 2001 changed course. Over 100 sq. kms of land in the periphery zoned for new residential growth. FSI limit in the city raised. Appropriation of private land for public purposes abandoned, replaced by the Town Planning Schemes See Ballaney and Patel (2009). 50 percent of reservations not yet acquired were de-reserved.
- 2000-2009 Town Planning Schemes vigorously pursued by AUDA and the AMC, over 200 sq km developed, vs. 100 sq km in the preceding 25 years.
- Rent Control legislation in 1947 froze rental rates in Mumbai for current occupants and their heirs, freezing redevelopment and investment in these areas.
- 1964 -1967. Varying FAR limits were introduced. Newly reclaimed areas – 3.5 and 4.5, older planned areas 2.45, inner city unplanned areas 1.66, relatively new areas 1.33 and the expanding suburbs 1. Prescribed FAR less than actual in many areas, freezing this stock for redevelopment. Plan prescribed maximum density of 250 dwelling units per hectare at FAR of 1, this implies 430 sq foot average dwelling unit size.
- In 1970 Regional Plan proposed development of Navi Mumbai across the harbour as a new town for diverting growth of Mumbai to mainland.
- In 1991, FAR lowered to 1.33 for the entire Island City and 1 for the Suburbs. Minimum densities required in some areas to ensure supply of smaller dwelling units. 1995-1999 TDRs selectively introduced and continue as a means of relaxing FAR on a case by case basis for slum rehabilitation and redevelopment of rent controlled buildings.
- Rent Control reformed in 1999 to allow 4 percent per annum increase and exempted new construction. Market response limited so far.

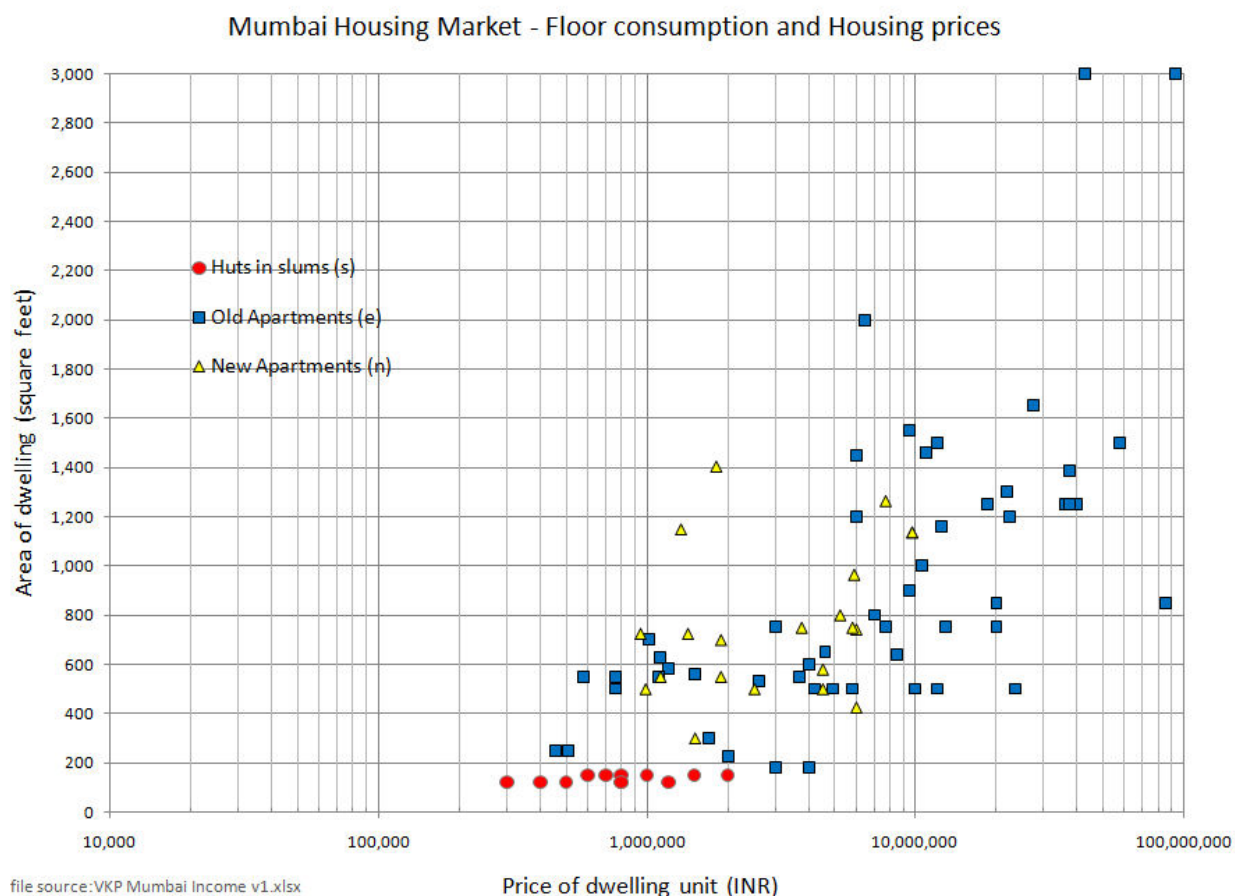
## Understanding housing characteristics in prevailing market conditions

The next step in making a market assessment is to understand the price and location characteristics of the accommodations families actually choose to live in and builders choose to supply. This can be measured at many different degrees of precision, depending on the final use of the data. For the purposes of this illustrative exercise, we surveyed a few dozen households<sup>12</sup>. The survey was structured around a housing typology based on expert knowledge. Samples were not randomly selected. The result of the survey, while not statistically significant, provides a snapshot image of the housing stock beyond the formal/ informal dichotomy. Any institutions interested in housing affordability should conduct such surveys, allocating enough resources to provide statistically significant results. Eventually a fully fledged housing census could be completed in each city and hedonic price indexes estimated to understand the housing market, but it is possible to get valuable insights with methods that are far less demanding.

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<sup>12</sup> Further details on sampling approach and data collection available upon request.



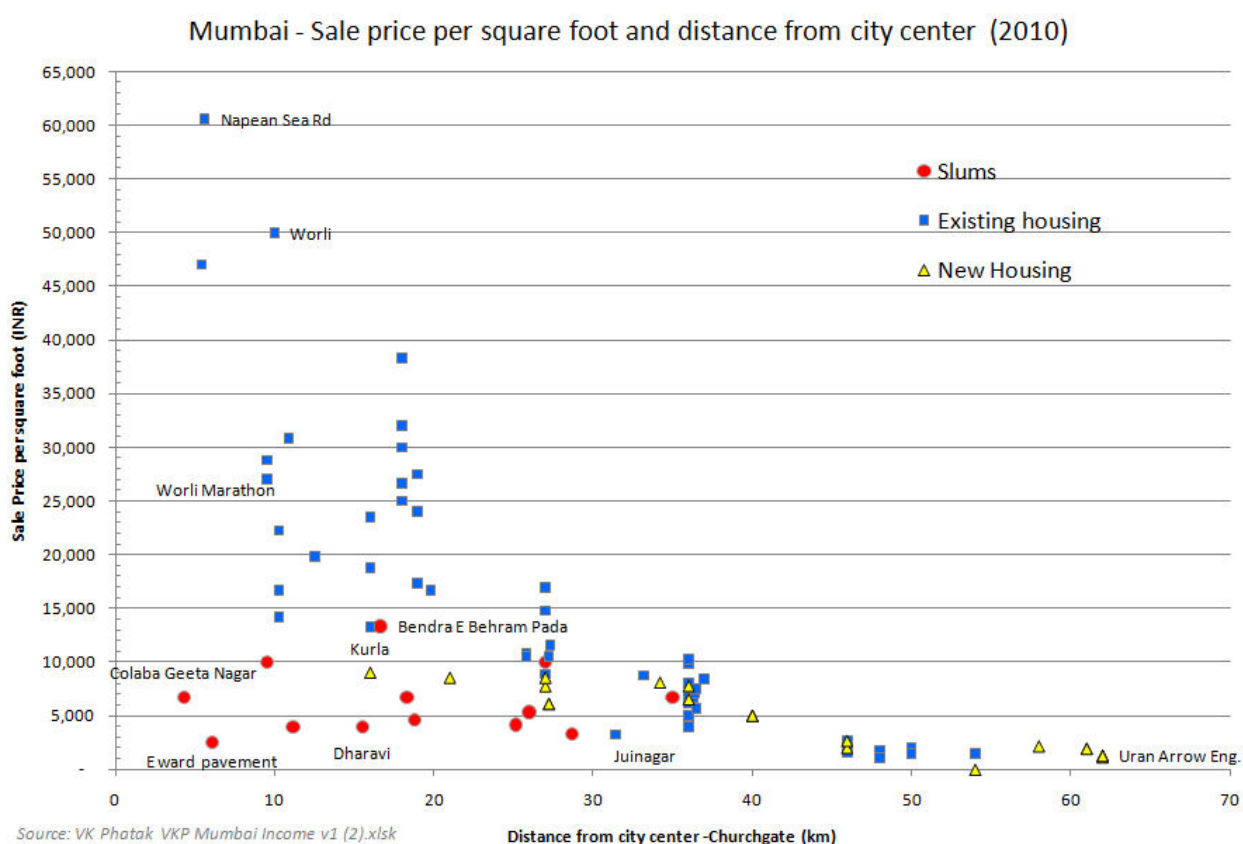


**Figure 8: Mumbai housing market -Floor consumption and housing price**  
**Source: Author's calculations**

In Figure 8 we have divided the current Mumbai housing market into 3 categories: (1) new apartments (apartments currently on sale or sold after 2008), (2) old apartments (apartments built before 2008, some of them might be 100 years old) and (3) slums. The case studies include a number of data, such as location, size of apartment, current resale value, etc. for each housing unit. It should be noted that the current market value of older apartments or housing units in slums do not necessarily mean that their current occupant can afford to pay this price. Often they cannot. This is typical in markets where supply is heavily constrained, as it is the case in Mumbai, the value of every dwelling, no matter how modest or even insalubrious, is constantly inflated by the very low supply elasticity when demand for housing increases.

The graph shown on *Figure 8* shows that in Mumbai:

- 1) No dwelling – formal or informal – can be purchased for less than INR 300,000.
- 2) The range of housing prices in the slum sample varies from INR 300,000 to 2 million for floor areas varying from 100 to below 200 square feet. This is of course the current sale price for such dwellings. It doesn't necessarily mean that the current occupant could afford this price.
- 3) At prices comparable to those paid for slum dwellings (INR 300,000 to 2 million) larger formal apartments can be purchased.

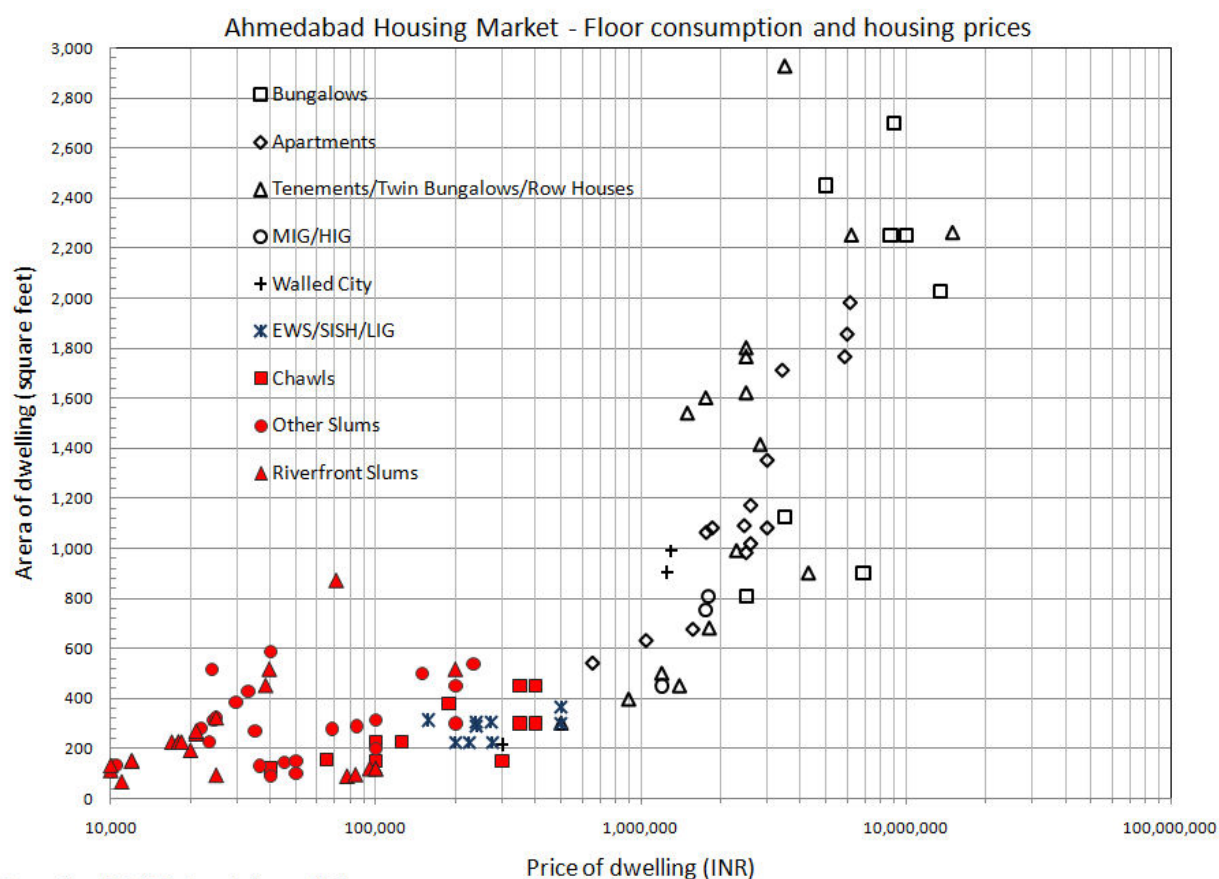


**Figure 9: Mumbai Housing market - sale price and distance from city center**

**Source: Authors' Calculations.**

- 4) Displaying the cost per square foot for the same Mumbai case studies sorted by distance from the city center (*Figure 9*) shows that indeed the formal units that are comparable in prices with units found in slums are in far away suburbs at more than 30 km from the city center (defined as Churchgate).

- 5) However it is intriguing that *across* different slums the cost per square foot does not vary much with distance. A likely explanation is that the people living in Mumbai slums are unable to commute long distances, and therefore select to live in areas close to work. These well located slums are by now fully built out and limited in supply. Provided the slums are located close to high density residential and business areas, prices settle at the price the market for such low quality housing can bear. This hypothesis is supported by the findings of a recent transport survey of Mumbai slums that 67 % of slum dwellers commute less than 3km (World Bank 2005). The variations in sale price per square foot in slums as observed in *Figure 8* are uncorrelated with distance and may reflect differences in infrastructure quality. Any full-fledged city assessment would have to include data on both these factors, commuting patterns and infrastructure quality.

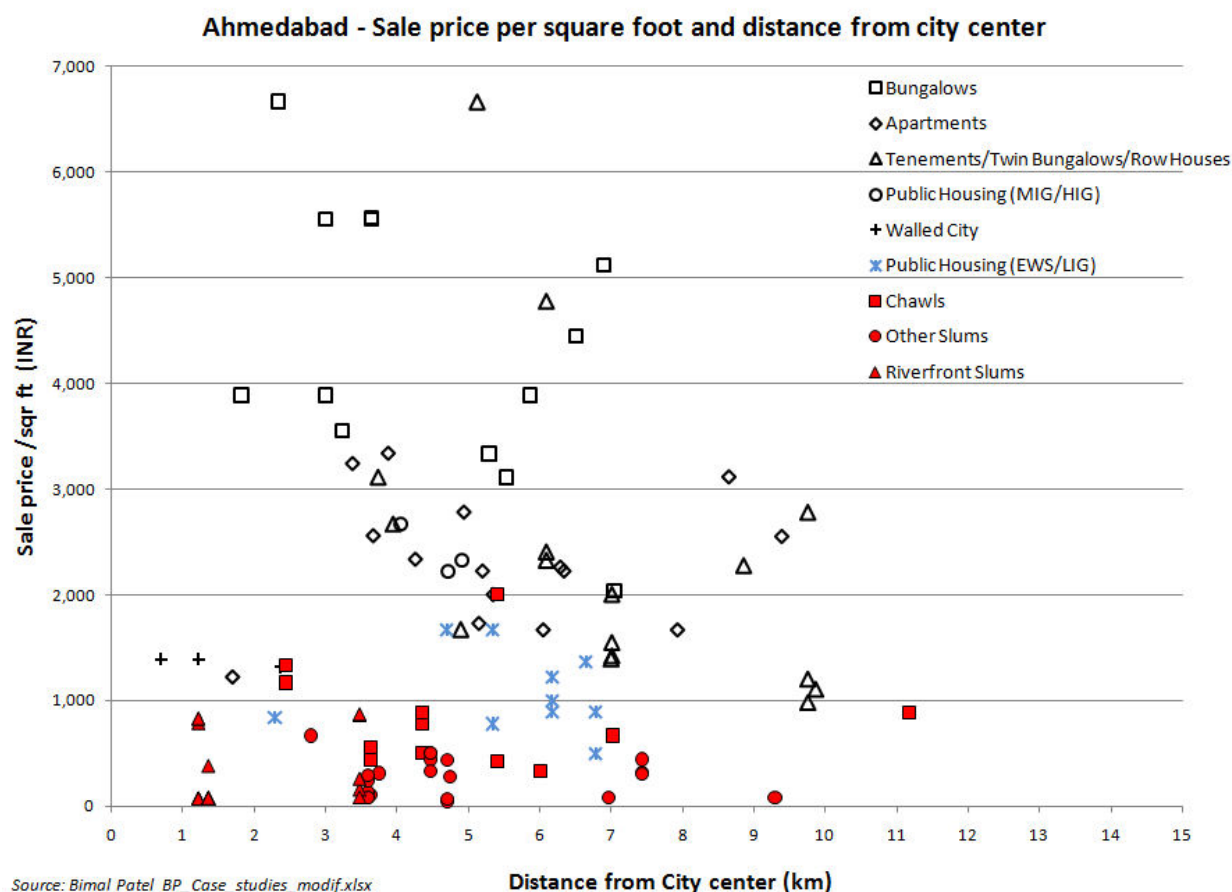


**Figure 10: Ahmedabad housing market - Floor consumption and housing prices** Source: Authors' Calculations

The housing market in Ahmedabad (*Figures 10 and 11*), as might be expected, shows a very different pattern.

- 1) Prices are much lower overall. The lowest priced unit is 30 times less expensive than its equivalent in Mumbai. A number of informal solutions are available around INR100,000, and all informal housing prices are below INR 400,000, putting the highest priced unit of informal housing at 8 times less than the equivalent in Mumbai.
- 2) There is practically no overlap in price of informal and formal housing. Only subsidized EWS housing and units provided by the Housing Board overlap with both the prices and floor area of the informal sector. This lack of overlap is due to the relatively lower premium paid for well located slums and the lower costs of land overall.
- 3) Like Mumbai, in the formal sector the price per square foot is tightly correlated with distance from the city center (crossing of Ashram Rd and Gandhi Bridge) while this is not the case for slums. Ahmedabad's slums are relatively small pockets distributed close to the city center. Analysis of transport patterns as in the transport survey should be done to confirm the preference for short commutes in Ahmedabad's slums.
- 4) Unlike Mumbai, Ahmedabad is far less spread out. The furthest distance from the city center for formal housing in Mumbai is roughly six times higher than in Ahmedabad, for slums, it is three times higher.
- 5) There is an overlap between the floor size at the low end of the formal market and the high end of the informal market, which is not the case in Mumbai. Again, this indicates less pressure to economize on expensive land to live in a good location.
- 6) *Figure 11* suggests that in Ahmedabad an adequate formal alternative for slum housing would be priced between INR 1500 and 2000 per square foot and would be located not farther than 6 km from the city center. Such a formal dwelling could be attainable based on the implicit price of land in slum areas today. However, the standards for a formal home should not increase the unit size or consumption of land unnecessarily.

- 7) The above result is quite different from the one obtained in Mumbai. This demonstrates that imposing norms, price and income ceilings to be applied for all of urban India makes little sense for designing a cost effective large-scale program for slum dwellers.



**Figure 11: Ahmedabad housing market - sale price and distance from city center** Source: Authors' calculations

Using the indications from the market sample for Mumbai and Ahmedabad, we can return to making a rough estimate the size of the population that would need a minimum subsidy for a 130 square foot home.

Assume that an improved slum dwelling (a reasonable quality building, but not multi-story) would be provided. If the construction cost is INR. 465 per square

foot, then the minimum household income level to afford construction costs alone is about INR 2100 and using the residual cost of land based on the market assessment data for Ahmedabad (see figure 10) this figure increases to 2500 per month<sup>13</sup>. This figure is roughly 90% of the All India urban poverty line (Himanshu:2009). For Ahmedabad, our income distribution data suggest this target population would amount to about 10% of the total. Performing a similar calculation for Mumbai, based on derived cost of land for Dharavi<sup>14</sup>, the required income per month is roughly 10 times the figure for Ahmedabad, or about INR 26,000. Although incomes in Mumbai are higher than in Ahmedabad, nonetheless 80% of the population is below this required income level. This simple exercise shows the dramatic difference that real estate market conditions can make for the size of even a minimalist slum program<sup>15</sup>. They also show that without supply side and regulatory measures in many cities, addressing basic needs can rapidly become an unmanageable problem.

Now we turn to a rough characterization of the housing market equilibrium using the income distribution and housing price indications developed above. Figure 12 illustrates the housing market equilibrium in Mumbai. Using house price indications, affordability estimates based on the income distribution data, and estimates of the stock of various types of housing in our typology, this figure shows how different income classes are distributed into various types of accommodation in Mumbai. Much of the middle class and all of the poor are forced into substandard housing because of the high price of land and the highly inadequate supply of housing. Most households are living in slums and chawls<sup>16</sup>. The number of such dwelling units can only grow through subdivision of the existing floor space or densification by adding additional floors. This illustrates the difficulties created by freezing so much of the housing stock for redevelopment through reservations or rent controls. (See box 1 above) Most of the scope for

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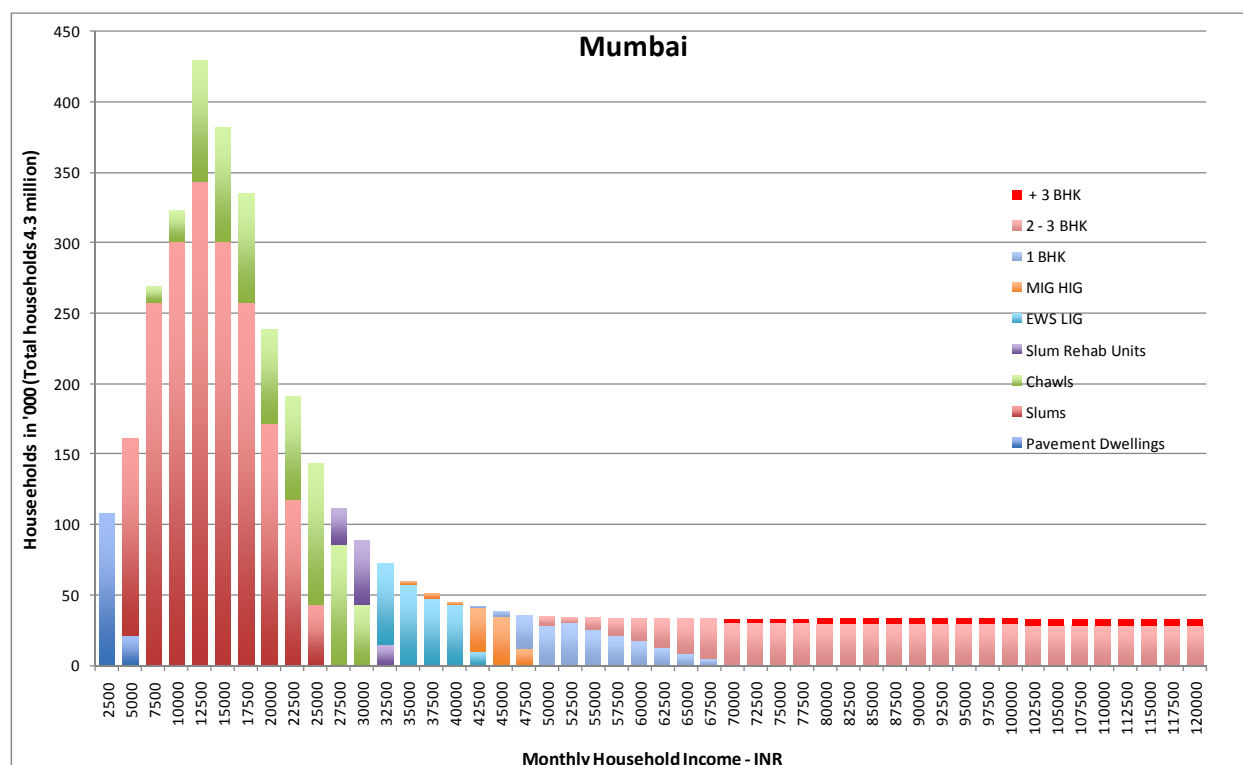
<sup>13</sup> Residual land value is calculated by taking market price per square foot of housing space, subtracting cost of construction, then calculating land value using the assumption that land area would 16% more than the surface area. These calculations are illustrative only and would have to be redone based on field surveys in the city. We also assume that a household could afford a home 2.4 times its income. Again, such figures should be validated with field measurements when actually used for establishing the program in a city.

<sup>14</sup> Dharavi is well located, but is still one of the cheapest housing solutions per sq foot. Figures 8-9 illustrate that it is necessary to move more than 50km from the city centre to achieve such a low price. It is quite unrealistic to expect that many poor households will accept to stay at these long distances from their work—even if they are provided with a home there.

<sup>15</sup> These calculations should not be interpreted as a costing of a minimalist program of housing improvement. Such a costing would need to include, among others, infrastructure upgrading, both tertiary improvements for individual households and secondary and primary network upgrades to ensure the capacity of the system can handle the expansion of new connections.

<sup>16</sup> Chawls are low standard housing once provided to factory workers by their employers. They do not meet current standards for formal housing.

housing stock expansion now is in the distant suburbs, which are unattractive to lower income groups because of the long commute.

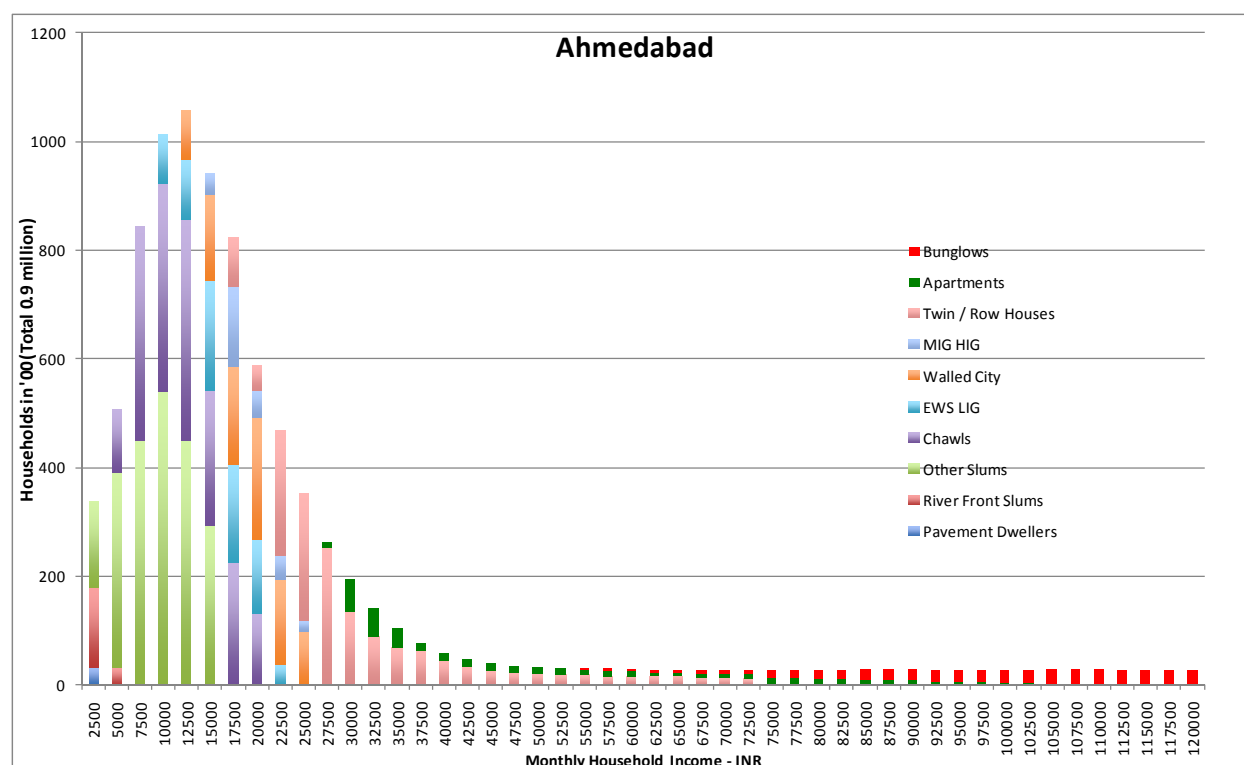


**Figure 12: Mumbai Household Income and Housing Typology**

Figures 8 and 9 showed that the higher income groups living in slums or chawls could afford one or two room apartments in the formal sector, provided these apartments were available in already urbanized areas and not in the distant suburbs. But for this shift to happen it would require a large new supply of higher income group housing. The stock of such housing is relatively small now, and it would require a dramatic increase in this stock of new housing to allow a minimum movement of the current slum population into better quality housing. It is also quite likely that a number of older well-located units are tied up in regulatory snarls or property disputes and unlikely to be vacated. This figure also shows that publicly provided housing (MIG HIG, EWS LIG, and slum rehab units) is an insignificant share of the overall supply. (less than 10 percent) and formal housing conforming with today's standards represents well less than half of the housing stock. Only the top 30 percent of households can afford formal sector housing that is compliant with today's standards

This figure allows us to understand how the housing market works as a whole and shows that this market is not really segmented into rigid discrete categories and sub-markets. If the supply of housing in the high income categories, say for households with income higher than INR 50,000 a month, is just enough to cater to new household formation in this category, then for all intents and purposes, existing household stay put and close out the scope for freeing up older existing stock for lower income groups. If the supply of new housing in the higher income category is even less than the new household formation, the higher income additional households will buy into the existing less desirable housing stock; this is the well known “gentrification” phenomenon. We would see then a movement of households toward the left, higher income households moving into less desirable housing and outbidding lesser income households for housing units that they were previously able to afford. This is probably what happened in Mumbai between 1991 and 2001 as shown above in Table 3.





**Figure 13: Ahmedabad Household Income and Housing Typology**

The market equilibrium in Ahmedabad also shows a relatively small share of public housing options, slightly above 10 percent of the total stock of housing which are affordable mostly for the middle class. The walled city and the chawls<sup>17</sup> provide formal housing solutions for a much more substantial share of lower income groups, amounting to 35 percent of total. Formal housing is affordable to the top 40 percent of households. Clearly supplies are far less constrained, land prices more manageable and affordability less of a problem. Yet, even in fortunate Ahmedabad, while less than 5 percent of the population is below the All India urban poverty level, a much larger percentage is living in slums. It is also striking that in a city where household income has grown so rapidly for the last several years<sup>18</sup>, the stock of compliant formal housing is still quite small.

## Recommendations for national policy

The case studies of Ahmedabad and Mumbai demonstrate that:

<sup>17</sup> This housing would not be compliant with today's standards but is still considered formal.

<sup>18</sup> Estimated at 12.5 per cent in NCAER (2010)

- 1) A normative approach based on quotas or housing standards developed by the Government will not be a relevant guide to action in the diversity of real estate market situations prevailing in urban India.
- 2) However, a common analytical approach can be developed successfully for very different cities, and this analytical methodology and format could be usefully disseminated by the Government to allow cities to develop their own policy and apply under a common format and criteria to for assistance from the central government

A framework for developing a city housing policy should include (a) short range “relief” program for current slum dwellers to make basic improvements in housing quality and provide connections to basic services, (b) in the medium range progressive removal of supply constraints, including a massive investment in primary infrastructure and transport, and (c) measures to facilitate private provision of a flow of formal units affordable for current slum dwellers’ income range.

### **Elements of a new affordable housing strategy for India**

Such a policy would have four components:

1. Improve rapidly the environmental conditions in slum areas that represent often around 50% of the current housing stock: slum upgrading to ensure basic service delivery, legalize real estate trading and construction in slums while creating some brakes to the process of wholesale purchase and redevelopment of well-located slum areas.
2. Unlock land supply for all
  - a) Massive investment in urban infrastructure—water and sanitation, solid waste management, electricity, and transportation infrastructure serving all income classes.
  - b) Remove regulatory constraints that force households and business to use more land than they would otherwise. This includes both tight floor space index constraints and high standards for formal housing that make even poor households purchase more land than they need, eg for parking for cars they do not own.
  - c) Remove barriers to titling and conversion of rural to urban land
  - d) Clarify property rights on frozen lands. Provide a path to legality of existing slum areas to unleash owner investments and permit redevelopment of these lands if the owners should wish to sell

3. Establish taxes or/and impact fees on new development combined with a program to lease or sell well located public lands to finance a dramatic expansion of basic urban infrastructure to expand the carrying capacity of the city.

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### Annex 1.

#### Measures in the General development control regulations of Ahmedabad that increase costs for low-income households

#### 10. DEVELOPMENT OF LAND

Regulation n°	Page	Description	Comments
10.1.1	41	Amalgamation and/or subdivision of building unit	<i>Necessity of having the “building unit(s)” approval by the competent authority makes the process more complex and may <u>postpone the whole project</u></i>
10.4	42	Width of road for Amalgamation/subdivision of building unit (10.1.1) and for internal building layout in building unit (10.2)	Width could be noticeably decreased in several cases (mainly “residential purpose”): it would consume less space and would decrease the infrastructure cost
10.6	44	Common plot (10% of the building unit) shall be provided for a building unit of 2000 sq.mts or more	It consumes land plots that could be used for residential/commercial purposes. Ask the community if it would accept less common space
10.8	45	In any case, building length < 150mts If building length > 50mts, through passages 7.50*6.00 are required every 30mts	Demand for so many passages consumes space (it is not required in other countries such as France)

#### 11. SPECIAL DEVELOPMENT REQUIREMENTS FOR EXISTING OLD WALLED CITY AND GANTAL AREA

#### 12. DEVELOPMENT REQUIREMENTS FOR OTHER THAN GANTAL AND WALLED CITY AREA

Regulation n°	Page	Description	Comments
12.1.A (B)	50	Road width (compared with uses not permitted)	Road width seems often too high and consumes more land
12.2(a)	50	Minimum area of a building unit	Concerning road width, same as above

12.3.1	51	Maximum permissible FSI (depending on zones): 0.30<FSI<2.25	Maintaining a low and almost uniform FSI consumes more land, increases land cost, travel requirement and infrastructure expenditures
12.3.2	51	Maximum permissible height shall be 40mts	
12.4.1 (more generally, the whole chapter 12.4)	52	Margin and minimum built-up area (minimum margin size)	Margins seem unnecessarily large and consume land

### 13. COMPOUND WALLS AND GATES

### 14. DISTANCE FROM WATER COURSE

### 15. DEVELOPMENT OF LOW COST HOUSING

-> Only for schemes undertaken by public agencies, co-operative societies, Government or semi-government bodies, registered developers

Regulation n°	Page	Description	Comments
15.1.(i)	59	The maximum permissible density in dwelling = 225 dwellings per hectare	Given other regulations limiting densities, what is rationale?
15.1.5. (ii)...(vi)	59	Plot size < 40 sq.mts Built-up area < 70% of the plot area Minimum frontage of plot = 3mts in width Maximum numbers of stories shall be ground plus one upper storey only 10% of the plot area shall be provided for open/community space	See above

15.2 (2)	59	Maximum permissible FSI = 1.8	

## 16. PROVISIONS FOR SPECIAL DEVELOPMENTS

### 17. GENERAL BUILDING REQUIREMENTS

Regulation n°	Page	Description	Comments
17.1 (i)	65	Lift shall be provided in case of building having height more than 13 mts from ground level	Communities say they would accept 4 floors building without elevators
17.1 (iii)	65	In case of building with 21 mts or more in height, at least two lifts shall be provided	Same as above
17.20.8 17.20.13	77	Maintaining skyline and architectural harmony	Blanket restriction. Need for such rules depends on the number and the location of precincts (vague)including listed heritage buildings.

### 18. REGULATIONS FOR SPECIAL STRUCTURES (cinema, theater, meeting hall...)

### 19. PARKING

Regulation n°	Page	Description	Comments
19.1	91	For residential area, parking space required is 15% of maximum permissible FSI	For low-income residents there a real demand for such a parking area which is costly and consumes land? This rule combines with height restrictions and requirements for elevators to increase demand for land or require higher costs for elevators.



## Annex 2. Ahmedabad and Mumbai: Computation of Income Distributions and Allocation of Households Across Housing Stocks

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### A. Income Distribution

Data about income distribution in Ahmedabad and Mumbai is reported in the recent NCAER publication.<sup>19</sup> The income distribution in 2007-8 represented in 2004-5 prices is shown in Table 1.

**Table 1: Income Distribution: Ahmedabad and Mumbai**

Income Distribution 2007-8, Mean Income in 2004-5 Prices				
Class	Ahmedabad		Mumbai	
	% of Total Households	Annual Total Income of the Class INR in Million	% of Total Income	Annual Total Income of the Class INR in Million
Low Income	13.6	38,906	10.8	213,372
Aspirants	43.9	125,585	41.1	811,998
Middle Class	39.8	113,856	41.9	827,804
High Income	2.7	7,724	6.2	122,491
Total	100	286,070	100	1,975,665
Mean Household Annual Income		286,070	1,975,665	
Households million		317,856	459,457	
		0.9	4.3	

Note: Outputs of the Study are shaded

Source: NCAER (2010)

It may be noted that NCAER has furnished Mean Household Annual Income and Number of Households. From this total household income is calculated (Households x Mean Income). The total household income of the city is distributed across the four income classes according to the shares provided by NCAER.

### B. Distribution of Households according to Income Classes

NCAER (2010) provides the household income range for each class indicated above in USD. These have been converted to INR at an exchange rate of 1USD=INR 46. By dividing the total income of the class shown in Table 1 by the estimated household income the number of households in each class is arrived at. This is shown in Table 2.

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<sup>19</sup> NCAER (2010)

**Table 2: Distribution of Households by Income Classes**

Mumbai: Household Distribution according to Income Classes				
		Mumbai		
Class	Annual Income- Range 2001-2 INR	Average Income 2004-5 in INR at USD 1 = INR 46	Households in million	% of Households
Low Income	less than 90,000	138,000	0.86	20.00
Aspirants	90,000 to 200,000	276,000	1.72	40.00
Middle Class	200,000 to 1000,000	1,380,000	1.51	35.00
High Income	above 1000,000	2,760,000	0.22	5.00
Total		759,000	4.30	100.00
		759,000		
Mean Household Annual Income		3,263,700		459,457
Households million				4.3
Note: Outputs of the Study are shaded				
Source: NCAER (2010)				

Ahmedabad: Household Distribution according to Income Classes				
		Ahmedabad		
Class	Annual Income- Range 2004-5 USD	Average Income 2004-5 in INR at USD 1 = INR 46	Households in million	% of Households
Low Income	<3000	138,000	0.27	30.00
Aspirants	3000 to 6000	276,000	0.42	47.00
Middle Class	6000 to 30000	1,380,000	0.18	20.00
High Income	> 30000	2,760,000	0.03	3.00
Total		529,920	0.90	100.00
		529,920		
Mean Household Annual Income		476,928		317,856
Households million				0.9

It may be clarified that since the mean income in the above table is calculated at the top end of the income bracket it is deliberately allowed to be higher than that shown in Table 1. This has enabled household income distribution at finer and uniform income intervals of INR 2500 to result in final mean income (after some iterations) to be in tune with that shown in Table 1.

### C. Distribution of Households in Finer Income Classes

The above household distribution in broad income classes has been translated into distribution across finer income classes. The distribution of households in finer income classes for the Ahmedabad and Mumbai is depicted in Graphs in the text. Although the household distribution has been worked out for income ranging from INR 2500 to INR 300,000 the graphs show incomes from INR 2500 to INR 120,000. These account for 97% and 95% of the household in Ahmedabad and Mumbai respectively.

The mean and median incomes indicate the likely variation in the income distribution of the two cities. These are given in Table 3.

**Table 3: Household Income Distribution**

City	Mean Income INR per Month	Median Income INR per Month
Ahmedabad	28000	15000
Mumbai	41000	20000

## D. Ahmedabad: Housing Stock by Type

The available housing stock in Ahmedabad is identified as shown in Table 4.

**Table 4: Ahmedabad Housing Stock**

Sr. No.	House type	Price range INR	Percent of Stock	Nature of Stock
1	Pavement Dwellers		0.4	Informal
2	River front slums	10,000 – 200,000	2.0	Informal
3	Other slums	20,000 – 225,000	25.0	Informal
4	Chawls	40,000- 400,000	21.1	Formal but non-compliant with present standards
5	EWS LIG	180,000 – 500,000	8.1	Public Housing
6	Walled City	200,000	10.1	Formal but non-compliant with present standards
7	MIG HIG	1200,000 – 1800,000	3.1	Public Housing
8	Twin/ Row Houses	900,000 – 60,00,000	30.2	Formal
9	Apartments	750,000 – 60,00,000		
10	Bungalows	2500,000 – 100,00,000		
			100.0	

Affordability of households apart from income, vary considerably depending upon age of the head of household, access to housing finance and availability of the stock. For example stock of MIG HIG public house is so small that despite initial low prices it quickly adjusts to market in terms of prices and income of the occupants. The intended households then have to seek shelter in walled city or distant apartments. For household in slums despite increase in income there are no opportunities to seek better and formal houses. Taking into account these considerations, total households are allocated to available stock according to their purchasing power using standard affordability multiples for home purchase—2.5 x annual income. This allocation is shown in Figure 13 in the main text.

## E. Mumbai: Housing Stock by Type

Following methodology similar to that of Ahmedabad Mumbai's housing stock is categorized as shown in Table 5.

**Table 5: Mumbai Housing Stock**

Sr. No.	House type	Price range INR	Percent of Stock	Nature of Stock
1	Pavement Dwellers	300,000 – 23,50,000	3	Informal
3	Slums		45	Informal
4	Chawls	20,00,000 – 40,00,000	15	Formal but non-compliant with present standards
5	Slum Rehabilitation		2	Formal initially free to slum dwellers
5	EWS LIG		5	Public Housing
7	MIG HIG	10,20,000 – 85,00,000	2	Public Housing
8	1 BHK Apartments		28	Formal
9	2 – 3 BHK Apartments	65,00,000 –		
10	+ 3 BHK Apartments	25,00,00,000		
	Total		100	

Apart from the factors noted in above in case of Ahmedabad, in case Mumbai time and cost of travel to work have a strong influence in selecting type of house. Moreover pernicious controls on development have severely limited the opportunity for improving the shelter for the majority. This illustrated in Figure 12 in the main text.